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COMMERCIAL FISHERIES REVIEW

formerly "FISHERY MARKET NEWS"



Vol. 8, No. 3

MARCH 1946

FISH and WILDLIFE SERVICE
United States Department of the Interior
Washington, D.C.



COMMERCIAL FISHERIES REVIEW



A REVIEW OF DEVELOPMENTS AND NEWS OF THE FISHERY INDUSTRIES
PREPARED IN THE DIVISION OF COMMERCIAL FISHERIES

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Applications for **COMMERCIAL FISHERIES REVIEW**, which is mailed free to members of the fishery industry and allied interests, should be addressed to the

Director, Fish and Wildlife Service, United States Department of the Interior, Washington, 25, D.C.

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a pound net for shad and herring.

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COMMERCIAL FISHERIES REVIEW

March 1946

Washington 25, D. C.

Vol. 8, No. 3

FISHERY STATISTICS

By E. A. Power *

To operate efficiently, an industry must have readily available accurate current information concerning its operations. Data on production, prices, sales, stocks, and related information are the measure of whether an industry is in a healthy or an unhealthy condition. Review of an industry's statistics indicate trends which assist members in arranging their activities so as to take advantage of changing business conditions. Statistics supply government with the information it requires in peacetime to assist in protecting and developing industry, and in wartime, they are the foundation on which a government marshals its strength.

Because of its widespread activities, the diversity of its products, and the absence of control over the supply of fish and shellfish in the sea, the fishing industry and government agencies concerned with the fisheries are particularly dependent upon statistical information.

To supply the data required by industry and government, the Fish and Wildlife Service conducts detailed statistical surveys of the fisheries, and assembles information collected by State fishery departments and other local, State, and Federal agencies. Information is obtained on employment in the fisheries, the volume and value of the catch, production of manufactured fishery products, daily receipts and prices in important marketing or producing centers, freezings and cold-storage holdings, foreign trade statistics, and related information. These data are published in a large number of statistical bulletins, Market News reports, and other publications.



The Fish and Wildlife Service also maintains lists of wholesale dealers and manufacturers of fishery products for each of the coastal and Great Lakes States.

The lists contain the names and addresses of fishery firms, and indicate the type of product each handles. Lists of cannery of individual fishery products, manufacturers of fishery by-products, and cold-storage operators freezing or storing fish and shellfish are also maintained. Requests for lists of dealers should be addressed to the Division of Commercial Fish-

eries, U. S. Fish and Wildlife Service, Washington 25, D. C. There is no charge for the lists.



In addition to the current informational reports, the Fish and Wildlife Service publishes a large number of scientific and technical reports. Many of these are available for free distribution and the remainder can be purchased from the

*Chief, Statistical Section.

Superintendent of Documents or consulted in libraries. Information concerning these publications can be obtained by corresponding with the Fish and Wildlife Service, Merchandise Mart, Chicago 54, Illinois.

To acquaint persons interested in the fishing industry with the statistical and Market News publications released by the Fish and Wildlife Service, there is contained in the following pages, the titles of the various reports. A description of the information contained in each publication and the frequency with which it is released is indicated.

Most of the statistical reports are distributed free to persons interested in receiving them. Mailing lists are maintained and persons wishing to receive any, or all, of the free publications as they are issued can have their names added to the Service's mailing lists upon request. Reports which are sold can be purchased from the Superintendent of Documents, Government Printing Office, Washington 25, D. C. Information on how to obtain the various reports will be found on page 10.

Statistical Bulletins

Catch and Operating Unit Bulletins

Since funds available for conducting general statistical surveys of the fisheries have been extremely limited, it has been possible to conduct only three complete canvasses of the fisheries of the United States. These were for the years 1880, 1908, and 1931. In the years immediately preceding the second world war, annual canvasses were conducted for all areas except the Mississippi River and its tributaries. During the war, it was necessary to discontinue many of the surveys. Upon the end of the war, arrangements were made to resume the annual general statistical surveys of the coastal areas and to continue assembling catch data on the fisheries of the Great Lakes. It will not be possible to obtain operating unit data for the Great Lakes or to collect information on the fisheries of the Mississippi River and its tributaries until additional funds become available.

Upon completion of surveys of the fisheries in the various sections, a summary bulletin for the United States and Alaska, and individual sectional bulletins are released. The sectional bulletins contain data for individual States on the number of commercial fishermen engaged in the fisheries, size and type of craft employed, kind and quantity of gear operated, and the poundage and value of each species taken. A historical summary of the total volume and value of the catch for the years since 1880 is included in each sectional bulletin. The summary bulletin contains similar information for the various major fishery regions in the United States, as well as information on the fisheries of Alaska.

The following regional bulletins are released:



contains a review of the fisheries for the year and other information pertaining to the production and use of fishery products.

An annual summary of the fisheries of the United States and Alaska. The bulletin contains data on the number of commercial fishermen by sections, number of fishing craft, kind and quantity of gear operated, and the volume and value of the catch of each species of fish and shellfish. The report contains data on the total quantity and value of the catch of fishery products in each State and Alaska. It also

NEW ENGLAND FISHERIES

Department of the Interior
Fish and Wildlife Service
Division of Commercial Fisheries
Washington 25, D. C.



lock, lobsters, clams, oysters, and scallops. The principal manufactured products produced in these States are canned sardines and clams, fresh and frozen fillets, and fish meal and oil.

An annual bulletin containing data on the fisheries of Maine, New Hampshire, Massachusetts, Rhode Island, and Connecticut. The New England States are the principal sources of the nation's fresh and frozen fish. The total catch of fishery products averages about 650 million pounds annually. Most important among the species taken are haddock, rosefish, cod, sea herring, mackerel, flounders, pol-

MIDDLE ATLANTIC FISHERIES

Department of the Interior
Fish and Wildlife Service
Division of Commercial Fisheries
Washington 25, D. C.



New Jersey, and Delaware. This section leads the country in the production of smoked fish.

An annual bulletin containing data on the marine fisheries of New York, New Jersey, Pennsylvania, and Delaware. The Middle Atlantic States are large producers of butterfish, flounders, menhaden, whiting, clams, and oysters. The total catch averages about 280 million pounds annually. Large quantities of fish oil and meal are produced in the States of New York,

CHESAPEAKE FISHERIES

Department of the Interior
Fish and Wildlife Service
Division of Commercial Fisheries
Washington 25, D. C.



important shore fishery industries in this area are the packing of shucked oysters and fresh-cooked crabmeat, and the manufacture of fish meal and oil.

An annual bulletin containing data on the fisheries of Maryland and Virginia. The Chesapeake Bay States are the most important producing center for oysters, blue crabs, croakers, and alewives. Large quantities of menhaden are landed in Virginia. The total catch of fish and shellfish in these States averages about 300 million pounds annually. The most

SOUTH ATLANTIC & GULF FISHERIES

Department of the Interior
Fish and Wildlife Service

Division of Commercial Fisheries
Washington 25, D. C.



The total catch of fishery products in these States averages about 600 million pounds annually.

An annual bulletin containing data on the coastal fisheries of North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, and Texas. The largest shrimp fishery in the world is conducted from these States. Other important fishery products taken in this area are alewives, mullet, menhaden, sea trout, red snapper, Spanish mackerel, oysters, and crabs. The United States sponge fishery is centered on Florida's west coast.

LAKE FISHERIES

Department of the Interior
Fish and Wildlife Service
Division of Commercial Fisheries
Washington 25, D. C.



fishermen account for about 80 percent of the catch. The principal species taken are the blue pike, carp, lake herring, lake trout, whitefish, yellow perch, and yellow pike.

An annual bulletin containing data on the fisheries of the Great Lakes and border lakes of Northern Minnesota. The Great Lakes and their connecting waters form the largest single fresh-water area in the world. The total United States and Canadian commercial production of fish from the Great Lakes is about 100 million pounds annually. United States

MISSISSIPPI RIVER FISHERIES

Department of the Interior
Fish and Wildlife Service

Division of Commercial Fisheries
Washington 25, D. C.



A bulletin containing data on the fisheries of the Mississippi River and tributaries. Funds have been available for only a few complete surveys of these waters. The most recent were for the years 1908, 1922, and 1931. In the latter year, the catch amounted to 82,383,000 pounds. The principal species taken were buffalofish, carp, catfish, and freshwater mussels.

PACIFIC COAST FISHERIES

Department of the Interior
Fish and Wildlife Service

Division of Commercial Fisheries
Washington 25, D. C.



canned sardines (pilchards), tuna, mackerel, and other canned products are packed in the Pacific Coast States and the region leads all other areas in the production of fish meal and oil.

An annual bulletin containing data on the fisheries of Washington, Oregon, and California. The leading fisheries of the Pacific Coast States are those for pilchard, tuna, salmon, mackerel, halibut, flounders, sharks, crabs, and oysters. The catch of fish and shellfish in these States averages about 1,600 million pounds annually. Great quantities of

ALASKA FISHERIES

Department of the Interior
Fish and Wildlife Service

Division of Alaska Fisheries
Chicago 16, Illinois



The total catch of fishery products in Alaska averages about 700 million pounds annually. Most of the salmon are canned, while nearly all of the herring are manufactured into oil and meal. The halibut are marketed fresh or frozen.

An annual bulletin containing data collected and tabulated by the Division of Alaska Fisheries. The Territory of Alaska is the chief production center for salmon, herring, and halibut. Salmon is the most valuable fishery resource of the United States. In addition, considerable quantities of sablefish, clams, and crabs are taken in the Territory.

Processing and Cold-storage Bulletins

CURRENT FISHERY TRADE monthly summary

Department of the Interior
Fish and Wildlife Service

Division of Commercial Fisheries
Washington 25, D. C.

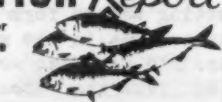


A monthly summary of information on landings and receipts of fishery products; production and holdings of frozen and cured fish; production of canned fish, fish oils, and fish meals; and the production and stocks of vitamin A livers and oils. This summary also contains comparative information for previous years, and production indexes. The bulletin is the Service's most complete source of current fishery information.

FROZEN FISH Report

Department of the Interior
Fish and Wildlife Service

Division of Commercial Fisheries
Washington 25, D. C.



industry. The annual summary contains data on the year's production and holdings of frozen fish and shellfish by months, species, and geographical sections. It also contains historical summaries of freezings and holdings of fishery products.

A monthly summary of freezings and holdings of fishery products by species and geographical sections, with comparisons for previous periods. It also contains monthly Canadian cold-storage data, comparative holdings in certain cities of the United States, and other information relating to the frozen fish

Canned FISH & Byproducts

Department of the Interior
Fish and Wildlife Service
Division of Commercial Fisheries
Washington 25, D. C.



An annual summary of the production and value of canned fish and shellfish and fishery byproducts (meal, oil, shell-products, kelp products, fish glue, etc.). Canned products are tabulated by style of pack, can size, and area of production. Historical summaries are shown for important items, and data are included on the number of plants preparing individual products.

Canned FISH Report

Department of the Interior
Fish and Wildlife Service
Division of Commercial Fisheries
Washington 25, D. C.



A monthly bulletin containing data on the pack of salmon, sardines, tuna, mackerel, shrimp, etc. Comparative data are shown for previous months. Most issues contain a review of some phases of the canned fish or shellfish industry. An annual summary of the data contained in the monthly reports is also released.

Canned SALMON

Department of the Interior
Fish and Wildlife Service
Division of Commercial Fisheries
Washington 25, D. C.



A preliminary annual report on the United States, Alaska, and British Columbia pack of canned salmon, with comparative information for previous years. Data on the Soviet and Japanese pack are included when these figures are available.

Canned OYSTERS

Department of the Interior
Fish and Wildlife Service
Division of Commercial Fisheries
Washington 25, D. C.



An annual preliminary report on the production of canned oysters, with a historical summary of the pack since 1921. The current year's pack is listed by States and the production of eastern and Pacific oysters is shown separately.

FISH Meal and Oil

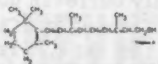
Department of the Interior
Fish and Wildlife Service
Division of Commercial Fisheries
Washington 25, D. C.



A monthly summary of the production of fish meal and oil. Monthly data on the yield of meal are based on reports from firms which manufacture over 90 percent of the total domestic production. The bulletins contain complete data on the production of fish oils, but do not contain information on the yield of fish liver oils.

VITAMIN A Report

Department of the Interior
Fish and Wildlife Service
Division of Commercial Fisheries
Washington 25, D. C.



A monthly summary of the receipts of fish livers, stocks, production, receipts, and shipments of vitamin A liver oils and concentrates with comparative information for previous periods. It also contains data on Government purchases of vitamin A fish liver oils and concentrates.

Packaged FISH

Department of the Interior
Fish and Wildlife Service
Division of Commercial Fisheries
Washington 25, D. C.



An annual summary of the production and value of fresh and frozen fish fillets, steaks, sticks, etc. These data are shown according to type of product, species, and area of production. The bulletins also contain data on the imports of fillets, steaks, etc., and historical information on production of packaged fish.

Manufactured FISHERY PRODUCTS

Department of the Interior
Fish and Wildlife Service
Division of Commercial Fisheries
Washington 25, D. C.



An annual summary of the production and value of all manufactured fishery products--canned, byproducts, cured, packaged fish, packaged shellfish, and fishermen's prepared products. All items are classified by species and type of product. Data on the total quantities and values of the various types of manufactured products, (i.e., canned, byproducts, packaged, smoked, and salted) are published in each bulletin.

Landings at Certain Ports

NEW ENGLAND LANDINGS

Department of the Interior
Fish and Wildlife Service
Division of Commercial Fisheries
Washington 25, D. C.

BOSTON
GLOUCESTER
NEW BEDFORD
CAPE COD
PORTLAND



- Monthly and annual summaries of landings at the New England ports of Boston, Gloucester, New Bedford, Portland, and on Cape Cod. The monthly summaries contain data on the poundage landed and price received by the fishermen for each species at the individual ports, and a summary of the catch by species, gear, and area of capture. The annual bulletins contain
- (1) a summary for each port showing landings by months, species, and value, and
 - (2) a summary of landings by species, gear, and area of capture for all ports combined.

NEW YORK CITY LANDINGS

Department of the Interior
Fish and Wildlife Service
Division of Commercial Fisheries
Washington 25, D. C.



A summary of landings of fishery products by species and months at New York City.

Miscellaneous Bulletins

IMPORTS & EXPORTS OF FISHERY PRODUCTS

Department of the Interior
Fish and Wildlife Service
Division of Commercial Fisheries
Washington 25, D. C.



An annual summary of United States foreign trade in fishery products. The bulletin lists the quantity and value of each item of fishery products imported or exported. The import data published represent imports entered for consumption.

FISHING VESSELS

Department of the Interior
Fish and Wildlife Service
Division of Commercial Fisheries
Washington 25, D. C.



A monthly bulletin containing information relative to fishing craft and gear. Each bulletin lists the name, size, home port, owner, etc., of all vessels issued their first documents as fishing vessels by the Bureau of the Customs during the previous month.

Annual Statistical Digests

UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

FISHERY STATISTICS OF THE UNITED STATES

STATISTICAL DIGEST No. ____

The Fish and Wildlife Service publishes an annual bound report containing detailed data on the fisheries of the United States and Alaska. Information is included in the report on the volume and value of the catch of fishery products, employment in fishing, quantity of gear operated, number of fishing and transporting craft in use, employment in wholesale and manufacturing establishments, and volume and value of manufactured fishery products and byproducts. These data are shown by individual States. In addition, data are included in the report on imports and exports of fishery products, landings at certain important fishing ports, etc. At the time of the writing of this report, publication of Fishery Statistics of the United States has been delayed because of the war, the last issue being for the year 1941. Reports for the years following 1941 will be released as rapidly as possible. Copies of Fishery Statistics of the United States for various years can be purchased from the Superintendent of Documents, Washington 25, D. C. The price is usually 25 or 35 cents per copy.

UNITED STATES DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE

Statistical Digest No. ____

ALASKA FISHERY AND FUR-SEAL INDUSTRIES

An annual report prepared by the Division of Alaska Fisheries which contains detailed information on the fisheries of Alaska and the Pribilof Islands fur-seal industry. There is included in the report information relative to the operations of the Division of Alaska Fisheries, general statistics on employment in the fisheries of Alaska, the catch of fishery products, and the production of manufactured fishery commodities. Data concerning the Pribilof Islands fur-seal industry include information on administration of the Islands, the taking of fur seal skins, sale of seal and fox skins,

and the annual count of the seal herd. Copies of Alaska Fishery and Fur-Seal Industries for various years can be purchased from the Superintendent of Documents, Washington 25, D. C. The price is usually 15 cents per copy.

Market News Publications

COMMERCIAL FISHERIES REVIEW

Formerly "FISHERY MARKET NEWS"

A monthly review of developments and news of the fishery industries. The issues contain technical and other articles relating to the production and marketing of fishery products, and current statistics on the catch of fish and shellfish and the production of manufactured fishery commodities.

Also appearing are reviews of government activities and government orders and announcements, as well as many other items of interest to the fishery industries. December issues contain a subject index of articles published during the year. Separate copies of feature articles will be supplied upon request.

Fishery Products Reports

Daily, monthly, and annual: Fish and Wildlife Service Market News offices located in eight of the important fish-producing and distribution centers issue daily market news reports. These contain information on the landings, receipts, shipments, and prices of fishery products, cold-storage movement, production of manufactured fishery commodities, imports of fishery products, government orders and announcements relating to the fisheries, and other information of interest to members of the fishery industries, government agencies, and others. The offices also issue monthly and annual summaries of the information published in the daily reports. Persons wishing to receive the reports as they are issued may have their names placed on the mailing lists by addressing requests to the individual Fishery Market News offices whose addresses appear below:

<u>Market News Office</u>	<u>Address</u>
New York 7, N. Y.	155 John Street
Boston 10, Mass.	253 $\frac{1}{2}$ Northern Avenue
Hampton, Va.	P. O. Box 364
Jacksonville 2, Fla.	221 W. Adams Street
New Orleans 16, La.	1100 Decatur Street
Chicago 6, Ill.	200 N. Jefferson Street
Seattle 1, Wash.	421 Bell Street Terminal
San Pedro, Calif.	Post Office Building

A review of the type of fishery information contained in the Fishery Products Reports issued by the individual offices follows:

UNITED STATES DEPARTMENT OF THE INTERIOR FISH AND WILDLIFE SERVICE DIVISION OF COMMERCIAL FISHERIES MARKET NEWS SERVICE		Page 1 - 4 Pages Tel. 15-1100 or 5 TEL-NY 1-1100 155 John Street NEW YORK 7, N. Y. Wed., Jan. 2, 1946 Clear-Temp. 30°
Friday-Thursday Daily 8:00 A.M. Eastern Standard Time	Tides High 1:30 0.1 Low 7:30 4.9 High 14:07 0.5 Low 19:51 3.7	FISHERY PRODUCTS REPORT - NUMBER 1 Unless otherwise specified, all sections refer to NEW YORK CITY. Quantities are in pounds, and prices are in cents per pound for stocks of good merchantable quality.

NEW YORK: Special features.

Daily receipts of fishery products at Fulton Market according to area of origin, and method of shipment (i. e., vessel landings, express, freight, and truck). Daily wholesale prices of fresh and salt-water

fishery products in New York. Holdings of frozen fishery products, and the weekly movement in and out of New York City and New Jersey cold-storage plants. Imports of fishery products into the New York Customs District. Monthly reports on landings of fishery products on Long Island and in New Jersey.

TIDES THURSDAY TIME HT. HIGH 11:03 9.0 LOW 6:48 00.0 HIGH 23:38 8.4 LOW 17:26 0.0 WEATHER AT 7:30 A.M. -- CLEAR 10° -- CLEAR	UNITED STATES DEPARTMENT OF THE INTERIOR FISH AND WILDLIFE SERVICE DIVISION OF COMMERCIAL FISHERIES, MARKET NEWS SERVICE FISHERY PRODUCTS REPORT -- NUMBER 200 Unless otherwise specified, all sections refer to BOSTON. QUANTITIES ARE IN POUNDS; AND PRICES ARE IN CENTS PER POUND FOR STOCKS OF GOOD MERCHANTABLE QUALITY. BOSTON FISH PIER FOR 48 HOURS ENDING 9:00 A.M. TODAY LANDINGS (TRAILING FARES) ARE IN THOUSANDS OF POUNDS -- 000 OMITTED. PRICES ARE EX-VESEL IN DOLLARS PER HUNDRED WEIGHT FOR FIRST SALES UNLESS OTHERWISE SPECIFIED.	TWO PAGES -- PAGE ONE TEL-LIBERTY 1513 OR 1514 6 PIER PHONE 253 $\frac{1}{2}$ NORTHERN AVE. BOSTON 10, MASS. WEDNESDAY 1/2/46
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BOSTON: Special features.

Daily information on the landings of fish and shellfish at the ports of Boston, Gloucester, New Bedford, Woods Hole, and Provincetown, Mass.; Portland, Me.; New York City; and Hampton, Va. Data on the price to the fishermen

for most ports. Information daily on rail arrivals of fishery products at Boston by State or Province from which they were billed. Data on the daily movement of fishery products in and out of Boston and Gloucester cold-storage plants, and weekly for Cape Cod, New Bedford, and Portland. Weekly holdings of frozen fishery products in Boston, Gloucester, New Bedford, and Cape Cod cold-storage plants.

Two Pages Tel. 6386 25 So. King Street HAMPTON, VA.	UNITED STATES DEPARTMENT OF THE INTERIOR FISH AND WILDLIFE SERVICE DIVISION OF COMMERCIAL FISHERIES MARKET NEWS SERVICE FISHERY PRODUCTS REPORT NO. 10 Unless otherwise specified, all sections refer to Virginia, Maryland, and North Carolina; quantities are in pounds for stocks of good merchantable quality.	Page 1 Weather 7:30 A.M. Temp. 22° Clear Wed., Jan. 2, 1946
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HAMPTON: Special features.

Daily reports on landings in the Hampton Roads area (Norfolk, Portsmouth, Newport News, Phoebus, and Hampton, Va.) in the Crisfield, Maryland area and in the Lower Northern Neck area of Virginia (Lancas-

ter and Northumberland Counties). Daily reports of prices for Chesapeake species at New York City. Monthly holdings and freezings of fishery products for the cold-storage plants in Maryland, Virginia, and the District of Columbia.

Three Pages Tel. 5-5737 221 W. Adams St. JACKSONVILLE 2, Fla.	UNITED STATES DEPARTMENT OF THE INTERIOR FISH AND WILDLIFE SERVICE DIVISION OF COMMERCIAL FISHERIES MARKET NEWS SERVICE FISHERY PRODUCTS REPORT NO. 277	Page 1 WEATHER at 7:30 a.m. 33° Clear Wed., Jan. 2, 1946
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Unless otherwise specified, all sections refer to FLORIDA: quantities are in pounds and prices are in cents per pound for stocks of good merchantable quality.

Stations). These data show species shipped from the east and west coasts of Florida separately according to State of destination. Weekly cold-storage movement and holdings for certain plants located in Florida, Georgia, and South Carolina. Weekly pack of canned shrimp.

Two Pages Tel. Magnolia 1674-5 1100 Decatur Street NEW ORLEANS 16, La.	UNITED STATES DEPARTMENT OF THE INTERIOR FISH AND WILDLIFE SERVICE DIVISION OF COMMERCIAL FISHERIES, MARKET NEWS SERVICE FISHERY PRODUCTS REPORT - NUMBER 1	Page 1 WEATHER at 7:30 a.m. 46° Cloudy Wed., Jan. 2, 1946
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Unless otherwise specified, all sections refer to ALABAMA, MISSISSIPPI, LOUISIANA, and TEXAS: quantities are in pounds and prices are in cents per pound for stocks of good merchantable quality.

For 48 hours ending 8 a.m. today

Includes approximate commercial production of principal fresh-water and salt-water varieties (except shrimp to be dried) as reported by producers, wholesalers, commission merchants and canners in the localities and areas mentioned. Shrimp are listed with heads on and in 20-lb. barrels. Oysters are listed in State barrels of the respective States.

Weekly pack of canned shrimp. Weekly movement of fish and shellfish in and out of cold-storage plants in the Gulf area, and holdings of these products. Price on the French Market in New Orleans. Imports of fish from the east coast of Mexico entered through Brownsville and Laredo, Texas.

Two Pages Tel. Randolph 2183 or 4 200 S. Jefferson Street CHICAGO 6, Illinois	UNITED STATES DEPARTMENT OF THE INTERIOR FISH AND WILDLIFE SERVICE DIVISION OF COMMERCIAL FISHERIES, MARKET NEWS SERVICE FISHERY PRODUCTS REPORT - NUMBER 1	Page 1 WEATHER at 7:30 a.m. 17° Cloudy Wed., Jan. 2, 1946
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Unless otherwise specified, all sections refer to CHICAGO: quantities are in pounds and prices are in cents per pound for stocks of good merchantable quality.

RAIL ARRIVALS AND TRUCK RECEIPTS

For 48 hours ending 8 a.m. today.

Includes all arrivals as reported by express and rail terminals and truck receipts as reported by wholesale dealers, including smokers.

Dealers' receipts to 8 a.m. today of products quoted below are included under Rail Arrivals and Truck Receipts.

fishery products in and out of certain Chicago cold-storage plants and weekly reports on stocks of frozen fish and shellfish in these plants.

Two Pages Post Office Bldg. San Pedro, Calif. Tel. FRernando 2-5554.	UNITED STATES DEPARTMENT OF THE INTERIOR FISH AND WILDLIFE SERVICE DIVISION OF COMMERCIAL FISHERIES MARKET NEWS SERVICE FISHERY PRODUCTS REPORT NUMBER 1	Page 1 WEDNESDAY JANUARY 2, 1946 Teletype SPD 7049
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PILCHARD FISHERY: Landings are hauling fares in tons as reported by OCF port recorders or field personnel of the FWS. Fares consist of Pilchards only, except where M is used to identify Mackerel, T is used to identify Tuna and MX is used to identify Mixed.

reports on the pack of canned sardines, tuna, and mackerel, and on the production of fish meal and oil in California. Monthly data on production and holdings of frozen fish in California plants. Imports of fish, shellfish, and fishery byproducts from Mexico into the California and Arizona Customs District.

Two Pages Tel. Main 0740 or 1 421 Ball St. Brevard SEATTLE 1, Washington	UNITED STATES DEPARTMENT OF THE INTERIOR FISH AND WILDLIFE SERVICE DIVISION OF COMMERCIAL FISHERIES, MARKET NEWS SERVICE FISHERY PRODUCTS REPORT - NUMBER 1	Page 1 WEATHER at 8:30 a.m. 45° Cloudy Wed., Jan. 2, 1946
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Unless otherwise specified, all sections refer to SEATTLE: quantities are in pounds, and prices are in cents per pound as paid by wholesale dealers for stocks of good merchantable quality at points indicated.

HALIBUT FISHERY: Landings (hauling fares based on dressed weights) and receipts are for 72 hours ending as shown.

SALMON FISHERY: For 72 hours ending as shown.

JACKSONVILLE: Special features.

Daily reports on the production of shrimp in the South Atlantic and Gulf area. Truck shipments of fishery products produced or loaded in Florida as reported by the Florida State Department of Agriculture (Road Guard

NEW ORLEANS: Special features.

Data on the production of principal fresh-water and salt-water species as reported by producers, wholesalers, commission merchants, and canners in important producing areas in the Gulf States. Rail shipments of fishery products from the Gulf States by species and destination.

CHICAGO: Special features.

Daily truck, express, and freight receipts of fresh- and salt-water fishery products at Chicago according to species and origin of shipment. A daily review of the supply and wholesale prices of fresh-water fish at Chicago. Daily movement of

SAN PEDRO: Special features.

Daily landings of sardines (pilchards), by individual fishing craft in the San Francisco, Monterey, and San Pedro areas. Landings of market fishes for the San Pedro, Santa Monica, and San Diego areas. Monthly

SEATTLE: Special features.

Daily receipts and prices of fishery products received at Seattle, and landings by the halibut fleet at British Columbia and Alaskan ports. Daily landings at Astoria, Ore., and Bellingham, Wash. Weekly detailed

reports on the pack of canned salmon in Alaska during the canning season. Periodic reports on the production of canned and cured fishery products and by-products (fish meal and oil) in each of the Pacific Coast States, British Columbia, and Alaska. Monthly freezings and holdings of frozen fish and shellfish in Oregon, Washington, and Alaskan plants.

Mailing Lists

Persons wishing to receive copies of fishery statistical bulletins, the annual statistical digests, or the monthly periodical Commercial Fisheries Review, as they are issued, can have their names added to the Service's mailing lists by addressing requests to the Fish and Wildlife Service, Washington 25, D. C. In submitting requests, the title of the bulletins desired or the number of the mailing list should be indicated.

Statistical bulletins and Fishery Products Reports will be sent to all desiring them. However, as only a limited number of the statistical digests are available for free distribution, the mailing list for these reports must be limited to Government agencies, research organizations, State fishery departments, and others having special interests in fishery statistics. Persons or organizations not meeting these qualifications can purchase copies of the digests from the Government Printing Office, Washington 25, D. C.

The mailing lists for the daily, monthly, and annual Fishery Products Reports issued by the Service's eight Market News offices are maintained in the field offices. Requests to receive copies of the reports should be addressed to the individual offices whose addresses appear on page 8.

The identification numbers assigned to the various mailing lists and the titles of the bulletins distributed on each list appear below. Since it is not possible to maintain separate mailing lists for each bulletin, several bulletins containing related information are distributed on most of the mailing lists. Because of this, persons requesting copies of a bulletin will receive all of the bulletins distributed on the list to which it is assigned.

No. of List	Title of Publication Statistical Bulletins	No. of List	Title of Publication Statistical Bulletins
128A	New England Landings--Boston, Gloucester, New Bedford, Portland, Cape Cod. New York City Landings.	128L	Fisheries of the United States and Alaska. New England Fisheries. Middle Atlantic Fisheries. Chesapeake Fisheries. South Atlantic and Gulf Fisheries. Lake Fisheries. Mississippi River Fisheries. Pacific Coast Fisheries. Alaska Fisheries.
128B	Frozen Fish Report	128M	Current Fishery Trade
128C	Fish Meal and Oil Vitamin A	128P	Imports and Exports of Fishery Products
128K	Canned Fishery Products and Byproducts Canned Salmon Canned Oysters Packaged Fish Manufactured Fishery Products Canned Fish Report	128R	Fishing Vessels

<u>No. of List</u>	<u>Title of Publication</u>	<u>No. of List</u>	<u>Title of Publication</u>
	<u>Statistical Digests</u>		<u>Market News Publications</u>
122	Alaska Fishery and Fur-Seal Industries	128D	Commercial Fisheries Review
129	Fishery Statistics of the United States	-	Daily, monthly, and annual fishery products reports.

Requests for these reports should be addressed to the individual Fish and Wildlife Service, Market News offices whose addresses appear on page 8.



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A BACTERIOLOGICAL STUDY OF FRESH MUSSELS

By Leslie A. Sandholzer and William Arcisz*

Methods of handling and shipping fresh mussels were discussed at a recent (1943) meeting of sanitarians of the U.S. Fish and Wildlife Service and the Office of Coordinator of Fisheries. With the exception of the work of Loosanoff (1943A), there had been no study to indicate the conditions under which quality could be maintained. In order to answer some of the more pertinent and practical questions, therefore, a study was made at the Service's College Park, Maryland, Laboratory, of the bacteriology of fresh mussels, in the shell, packed in different types of containers and held over a period of time.



Two types of quantitative bacteriological determinations were employed: The coliform content and the standard plate count. The former is generally considered to indicate the degree of fecal pollution, since the coliform group of bacteria is the best index available at the present time for this type of contamination. The plate count, by itself, has little significance, but when changes in count occur under various conditions, the direction of the change usually indicates alterations in the quality of the product. When the counts increase, a possibility of subsequent spoilage and decreased wholesomeness is indicated. The highest quality shellfish, from a sanitation viewpoint, are those which are entirely free of coliform bacteria and which yield low plate counts.

SOURCE OF MUSSELS: The mussels used in these experiments were from two sources; namely, Indian River, Milford, Connecticut, and Long Island Sound, about one mile from Point No Point, Connecticut (Loosanoff (1943B)). In the former area, the samples were taken from a bar 30 to 40 feet from shore. They were collected at low tide by means of a hand rake. In the latter area, a dredge was used for the collection of the specimens.

PRELIMINARY TREATMENT: After washing the mussels in river or sea water, they were brought to the laboratory and immediately packed in the experimental containers, or stored in tanks of sea water until used (Loosanoff (1942)). If the latter was done, the period of storage was never more than two days. Three types of containers were used in this study: Wooden barrels, which held two bushels of mussels apiece; splint hampers, each of which held one bushel; and splint baskets, which also held one bushel each. The barrels were of two types, regular and ventilated, the latter with one row of $\frac{1}{2}$ -inch vent holes around the center and another row 6 inches from the bottom of the barrel.



Shortages of barrels required their re-use after thorough cleaning, but new baskets and hampers were used for each of the four experiments conducted. These were thoroughly scrubbed and rinsed and permitted to dry for two days before being filled with mussels.

The barrels containing mussels were kept well surrounded with ice during each experimental run. Similar treatment was given the specimens packed in the hampers

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NOTE: The authors wish to express their appreciation to Drs. Paul S. Galtsoff and Victor L. Loosanoff for permitting them to use the facilities of the Shellfish Laboratory at Milford, Connecticut, for this study.

and baskets, except that an equivalent pack was kept without icing. All the containers were stored on a screened porch and kept covered with a tarpaulin to prevent contamination by flies and to shield the samples from direct sunlight.

The total period of storage for each experimental pack was four days, the samples being removed for bacteriological examination at the end of each 24 hours. The average air temperature during the period of the study was 60.2° F.



Sampling involved the removal of sufficient mussels from each pack so that 10 closed, living specimens could be obtained for examination. Top and bottom samples were taken from the barrels. To obtain initial bacterial counts, three samples of 10 specimens each were taken from the freshly collected mussels in every instance. These were packed in metal containers, refrigerated at the time of collection, and examined at the laboratory as soon as possible.

BACTERIOLOGICAL METHODS: Prior to the opening of the mussels, the specimens were first rinsed in running cold water and thoroughly scrubbed with a stiff brush. The byssus, or beard, was then removed, and each specimen that lost shell liquor in this process was discarded.

Following this, the specimens were immersed for 10 minutes in a hypochlorite solution containing 10 p.p.m. of available chlorine, and all animals that gaped or floated at the end of this time were discarded. Upon removal of the chlorine solution, the mussels were placed upon paper towels and allowed to drain dry. Those that gaped during this process were also discarded. The specimens were then opened with a sterile knife, and the meats and liquor of 10 mussels introduced into 100 ml. of sterile phosphate buffer solution. This mixture was shaken vigorously 25 times, and the supernatant was used as a source of inoculum.

Two types of quantitative determinations were made. The first was the standard plate count using nutrient agar. The plates were poured in triplicate at each of three dilutions, and the bacterial count per animal was determined from the plates having between 30 and 300 colonies after 48 hours incubation at 37° C. The second was the coliform content determination by the use of lactose broth. Three sets of five tubes each were seeded with 10, 1.0, and 0.1 ml. portions of the inoculum, respectively. Incubation was at 37° C. for 48 hours, the tubes being examined for gas production after 24 and 48 hours. Positive presumptive tests were partially confirmed with brilliant green lactose bile (2 percent) and the confirmations were completed by the usual methods (*Standard Methods of Water Analysis, 1936*). Hoskins' (1939) tables were employed for determining the Most Probable Number (M.P.N.) of coliform bacteria.

GENERAL OBSERVATIONS: Although no records were kept to show the incidence of weak and gaping mussels under the conditions of storage, certain general observations were made. These are listed below to show the changes which occurred in the various containers.

24 hours: The mussels at the top of all containers were comparatively dry. Those in the bottoms of the barrels were moist, but this may have been due to water from the preliminary rinsing, since no open or gaping mussels were observed.

48 hours: Some of the mussels showed signs of weakness as evidenced by the ease of opening. The un-iced mussels in the hampers and baskets showed a slight loss of shell liquor, and those in the bottom of the barrels were more moist than on the previous day.

72 hours: The mussels in all of the containers showed a loss of shell liquor. There were open and gaping animals in all splint containers and throughout the barrels. There seemed to be less liquor loss among those in the bottoms, both of the barrels and the iced containers, than in the tops of the barrels and un-iced containers.

96 hours: The incidence of open and gaping mussels was increased over that of the previous day. The amount of shell liquor was less in all specimens as noted in sampling, the un-iced specimens containing the least amount of liquor. Those mussels at the bottom of the barrels were very wet, and when the barrels had been emptied, two to three quarts of liquid remained in the bottom of each.

BACTERIOLOGICAL FINDINGS: The bacteriological data are summarized in Table 1. Initially, all of the specimens showed plate counts well under 100 per mussel, the

Table 1 - Standard Plate Count and M. P. N. of Coliform Bacteria per Mussel During Storage in Various Containers

Type of Container	Conditions of Storage	Average Standard Plate Count Bacteria per Mussel					Average M. P. N. of Coliform Bacteria per Mussel				
		Hours Stored					Hours Stored				
		0*	24	48	72	96	0**	24	48	72	96
Splint Basket	Iced	61	79	69	110	248	189	162	166	217	251
Splint Basket	No ice	61	61	73	122	130	189	157	215	267	583
Splint Hamper	Iced	61	174	150	450	399	189	275	356	234	837
Splint Hamper	No ice	61	98	80	129	152	189	162	329	587	737
	All iced										
Barrel, top	Not ventilated	61	378	546	474	603	189	306	376	794	905
Barrel, bottom	Not ventilated	61	244	234	509	697	189	603	800	1310	1347
Barrel, top	Ventilated	61	180	285	661	516	189	160	360	1227	1190
Barrel, bottom	Ventilated	61	124	198	651	757	189	215	619	1109	1763

*The range of initial standard plate counts per mussel was from 10 to 96, averaging 61.

**The range of initial Most Probable Number of coliform bacteria per mussel was from 10 to 413, averaging 189.

highest being 96, the lowest 10, and the average of all samples, 61. The coliform scores were of the same order of magnitude, with the exception of the last batch procured. This group had been collected immediately after a severe storm had disrupted the mussel beds. The M.P.N. of coliform bacteria per animal, immediately after the storm, was 413, but the average of all of the other samples was 48. The lowest initial coliform score was 10, and the average for all samples, including those taken after the storm, was 189 per animal.

In the case of the splint containers, most of the iced samples yielded consistently higher standard plate counts than did the un-iced. On the other hand, the coliform score was generally lower in the case of the iced specimens in splint containers. In both cases there appeared to be a marked increase in the plate count after 72 hours of storage, regardless of the storage temperature. The coliform content increased appreciably after 48 hours of storage in the majority of instances.

Most of the plate counts and coliform scores were higher for the mussels in the barrels than in the smaller containers. The final bacterial content of the mussels at the bottom of the barrels was greater than at the top, and the ventilation had no apparent effect. Ventilation also failed to influence the bacterial content of the mussels at the top of the barrel, the coliform scores being greater in the ventilated container than in the unventilated one after 72 hours of storage.

DISCUSSION: Loosanoff (1943A) has studied the viability of mussels at various temperatures: When mortality is used as an index of keeping quality, his data indicate that at 30° F. mussels may be kept 30 days; at 40° F., 12 days; at 50° F., 8 days; at 60° F., 6 days; and at 70° F., 4 days. From a study of the bacteriological findings of the experiments reported herein, however, three days seem to be the longest safe period of storage, regardless of temperature.

The present studies clearly show that packing in small containers yields a better product from a practical bacteriological standpoint. It is further indicated that coliform scores can best be kept low by restricting the storage period to 48 hours.

Observations of the commercial practices indicate that the difficulties which have been experienced with this shellfish are probably due to two factors. The first is storage for too long a period, the time between harvesting and marketing usually being three to four days. (This probably does not occur in the canning industry, where the fresh mussels are not stored for any considerable time.) The second factor is the failure to exercise ordinary care with regard to general sanitation and cleanliness in permitting exposure to filth, sunshine, etc. Contamination and a period of incubation will unfailingly result in mussels of poor quality bacteriologically.

With reasonable care in handling, and prompt delivery to the consumer, mussels are a wholesome source of food.

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A RAPID TEST FOR VITAMIN A STABILITY

By F. B. Sanford,* R. W. Harrison,** and M. E. Stansby*

Vitamin A is a relatively unstable substance. It is especially susceptible to destruction by oxidation. In fish liver oils, the destruction does not take place gradually. For a certain initial time (known as the induction period) unfavorable storage conditions produce little or no decomposition, but then a sudden and rapid diminishment in potency occurs. The relative stability of the vitamin A in various fish liver oils depends upon a number of factors, such as the presence or absence of natural antioxidants (substances which when present with vitamin A diminish its tendency to oxidize), the care with which the fish livers were handled prior to processing, and the particular rendering methods by which the oil was extracted from the livers.



If the seller knew in advance that a certain oil had low vitamin A stability, he could take steps to improve the stability so that the vitamin would not be easily lost after the oil reached the ultimate consumer. To prevent such losses, the dealers have needed a rapid laboratory method for predicting the stability of vitamin A oils. This need is increasing, because large quantities of fish livers are being imported from tropical regions where high storage temperatures may render the oils especially poor in vitamin stability.

Certain laboratory procedures have been used by fish liver oil producers and others to predict stability, but very little on this subject is to be found in the literature. However, many procedures are available for rapidly determining the stability of oil with respect to rancidity, and this report describes an adaptation of one of these to the determination of the stability of vitamin A oils. This test consists essentially of subjecting a small portion of the vitamin-bearing oil to rapid oxidation by bubbling air through the oil at an elevated temperature. The time required for the destruction, under controlled conditions, of a certain percentage of the initial vitamin A content serves as an index of the relative stability to be expected.

The oxidation is carried out in the bubbling tube shown in Figure 1 on p. 17. This apparatus consists of a test tube 22 millimeters in diameter by 230 millimeters long, through the side of which is sealed a delivery tube, 7 millimeters in diameter, leading to within 5 millimeters of the bottom of the test tube. The assembly is made entirely of non-actinic glass.

The bubbling tube is placed in a constant temperature bath, usually a steam bath at 100° C., and air is pumped through the delivery tube at the rate of about 350 milliliters per minute. A 10 milliliter portion of the oil to be tested is added to the tube and the time noted. Small samples are then withdrawn periodically by means of a clean thief made of glass tubing 3 millimeters in diameter by about 260 millimeters long.

The vitamin A concentration of the original oil and each subsequent sample is determined and plotted against time. The length of time required for decomposition of 50 percent of the initial vitamin A is estimated from the graph.

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In this work, the air for the bubbling tubes has been furnished by an air compressor and passed through a reducing valve to a manifold, 1 inch in diameter, fitted with 4 petcocks, by means of which the proper amount of air has been fed through rubber tubing leading to 4 individual bubbling tubes. In controlling the volume of air used, it has been found convenient to connect a U-tube flowmeter,¹ containing SAE 30 motor oil, to each individual feed line. The flowmeters are calibrated so that the differential in the heights of the oil columns will indicate the volume of air movement.

DISCUSSION: The vitamin A content of the oil decreases slowly during the induction period, the end of which is signalized by rapid increase in the rate of decomposition. In most oils, the induction period has ended by the time that 50 percent of the initial vitamin A has been decomposed, so that at this point, oxidative destruction is proceeding rapidly, and large changes in the amount of vitamin A in the oil take place quickly. If a graph is constructed in which the percentage of vitamin A remaining is plotted against time, the slope of the curve at the 50 percent point will be very steep, and even though the absolute measurements of vitamin A content are subject to some error, the point at which 50 percent of the vitamin A has been destroyed can be located quite accurately. As a consequence of these considerations, the time required for destruction of 50 percent of the vitamin A content has been chosen by this laboratory as an index of relative stability.

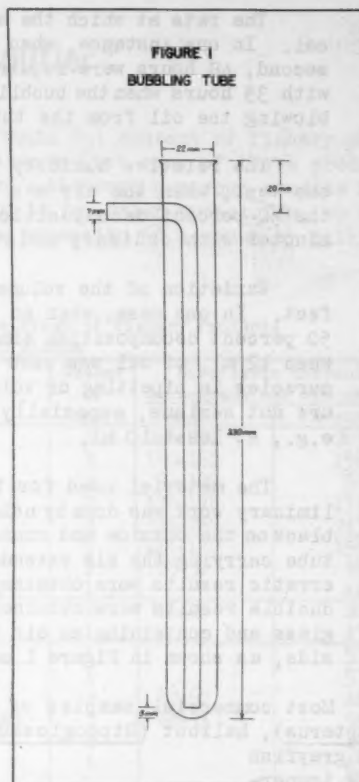
Obviously, the choice of this criterion is somewhat arbitrary, but it has the advantage of giving results that are closely reproducible. For example, in one instance, the stability of an oil at 100° C. was determined on four successive days with the following results:

Day of Examination	Number of Tests Run	Stability: Minutes required for 50 percent loss of vitamin A content
1	1	98
2	4	90; 90; 90; 90
3	2	90; 90
4	1	89

Before the adoption of the procedure given above, preliminary experiments were run to determine the effects of various factors on the destruction rate. These experiments showed the following:

It is of great importance that the oil temperature be constant during the aeration, as each decrease of 10 degrees centigrade in the temperature increases the time required for 50 percent destruction by a factor of

¹/Scientific Supplies Company, Seattle, Washington, Catalog No. 55775.



approximately 2.1. A water or steam bath is convenient for controlling the temperature.

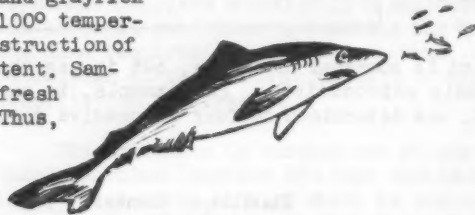
The rate at which the air is bubbled through the oil is less critical. In one instance, when the rate was between one and two bubbles per second, 48 hours were required for 50 percent decomposition, as compared with 35 hours when the bubbling rate was as high as could be used without blowing the oil from the tube.

The relative humidity of the air stream is unimportant. Thus in one test, when the air was dried by passing it over calcium chloride, the 50 percent decomposition time was 88 minutes, as compared with 90 minutes with ordinary moist air taken directly from the compressor.

Variation of the volume of oil in the bubbling tube had little effect. In one case, when an initial volume of 3 ml. of oil was used, the 50 percent decomposition time was 83 minutes, as compared with 90 minutes when 12 ml. of oil was used initially. It would thus appear that inaccuracies in pipetting or volume changes due to the withdrawal of samples are not serious, especially if the initial volume of oil is adequate; e.g., at least 10 ml.

The material used for the bubbling tubes is very important. Preliminary work was done by using one-inch by eight-inch test tubes painted black on the outside and containing a cork stopper through which the glass tube carrying the air extended to the bottom of the test tube. Somewhat erratic results were obtained by using this apparatus. Much more reproducible results were obtained with test tubes constructed of non-actinic glass and containing an air bubbling tube permanently sealed through the side, as shown in Figure 1 on p. 17.

Most commercial samples of liver oil from the soupfin shark (*Galeorhinus zyopterus*), halibut (*Hippoglossus hippoglossus*), lingcod (*Ophiodon elongatus*), and grayfish (*Squalus suckleyi*) have required, at the 100° temperature, from 50 to 150 minutes for decomposition of 50 percent of the initial vitamin A complexes prepared in the laboratory from fresh livers were considerably more stable. Thus, one sample of grayfish liver oil so prepared required 744 minutes before 50 percent of its vitamin A was decomposed.



In working with the more stable oils, it is desirable to perform the aeration at a temperature of 100° C. in order to complete the test in one day. However, with oils of low stability, the destruction is so rapid that it is often more convenient to work at a lower temperature such as 55°. In the case of grayfish liver oil, the point of 50 percent vitamin A decomposition is reached at 100° about 28 times as fast as at 55°.

It has not been definitely established that the results obtained in this accelerated oxidation test consistently correlate with the stability of the oil under the storage conditions normally prevailing. Tests to determine the extent of such correlation are planned, but since they involve long storage periods covering many months, the results are not available for presentation at this time.



RIBOFLAVIN ASSAYS OF FISHERY PRODUCTS

By Philip M. Sautier *

Published literature on the riboflavin (vitamin B₂) content of fishery products is very limited, but there is adequate evidence that some of these products are reasonably important sources of this vitamin. Although numerous studies have been reported dealing with assay methods and results for other foodstuffs, no comprehensive studies on fishery products, with the exception of a paper by Billings *et al* (1941), have been published.

Table 1 - The Riboflavin Content of the Edible Flesh of Fishery Products of Southeastern Alaska

Common Name	Scientific Name	Number of Assays	Riboflavin content micrograms per 100 grams	
			Range	Average
Clams--butter	<i>Saxidomus giganteus</i>	2	246-292	269
cockle	<i>Cardium corbis</i>	2	150-162	156
horse	<i>Schizothaerus nuttalli</i>	2	96-100	98
little neck	<i>Paphia staminea</i>	2	170-178	174
mud	<i>Mya arenaria</i>	2	221-265	243
Cod--grey	<i>Gadus macrocephalus</i>	6	141-170	158
ling	<i>Ophiodon elongatus</i>	2	28-50	39
kelp (Alaska greenling)	<i>Hexagrammos octogrammus</i>	1		44
Crab--dungeness	<i>Cancer magister</i>	2	16-24	20
Eulachon	<i>Thaleichthys pacificus</i>	1		43
Flounder--arrow-tooth halibut	<i>Atheresthes stomias</i>	1		52
Dover sole	<i>Microstomus pacificus</i>	1		57
English sole	<i>Parophrys vetulus</i>	2	32-60	44
flathead sole	<i>Hippoglossoides classodon</i>	2	48-53	51
petrale sole	<i>Eopsetta jordani</i>	1		49
rex sole	<i>Errex zachirus</i>	1		47
rock sole	<i>Lepidopsetta bilineata</i>	1		37
starry flounder	<i>Platichthys stellatus</i>	1		43
Halibut	<i>Hippoglossus hippoglossus</i>	11	36-62	47
Halibut cheeks		1		98
Herring	<i>Clupea pallasii</i>	20	181-272	217
Mussels	<i>Mytilus edulis</i>	1		249
Octopus	<i>Octopus bimaculatus</i>	1		40
Rockfish--black	<i>Sebastes species</i>	2	123-182	153
brown	" "	1		90
red	<i>Sebastes ruberrimus</i>	2	72-132	111
Sablefish	<i>Anoplopoma fimbria</i>	2	98-77	88
Salmon--red	<i>Oncorhynchus nerka</i>	5	40-90	72
pink	" <i>gorbuscha</i>	5	36-68	46
chum	" <i>keta</i>	5	48-72	59
silver	" <i>kisutch</i>	5	90-123	109
king	" <i>tschawytscha</i>	7	152-256	231
Shrimp--pink	<i>Pandalus borealis</i>	1		142
side stripe	<i>Pandalopsis dispar</i>	1		133
Trout--cutthroat	<i>Salmo clarkii</i>	1		93
Dolly Varden	<i>Salvelinus malma</i>	2	37-38	38
rainbow	<i>Salmo irideus</i>	1		203
steelhead	" <i>gairdnerii</i>	1		200

To help fill the need for such information about the fishery products of Alaska, this article presents a summary of assays for riboflavin made with 45

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species or varieties of fish, shellfish, and other marine animals. Because the number of samples of each type is very small, the values reported here are only indicative, and until corroborated by further results, should not be considered as being necessarily representative. There are, undoubtedly, variations due to season, sex, size, or other factors, and losses might occur if the product were cooked or processed.

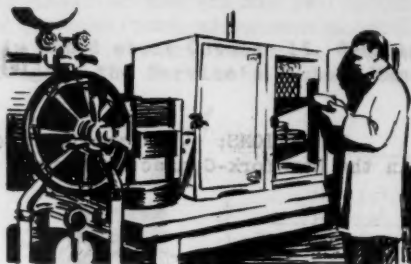
Table 2 - Riboflavin Content of Miscellaneous Raw Fishery Byproducts of Southeastern Alaska

Portion Assayed	Sample	Number of Assays	Riboflavin content micrograms per 100 grams	
			Range	Average
Liver:	Salmon--red	2	1630-2380	2005
	pink	3	730-1243	954
	chum	2	930-1050	990
	silver	3	950-1090	1000
	king	9	1250-2040	1815
	Lingcod	2	1170-1220	1195
	Grey cod	8	790-1540	1170
	Sablefish	1		890
	Arrow-tooth sole	1		876
	English sole	2	806-972	889
	Flathead sole	1		733
	Grayfish (<i>Squalus suckleyi</i>)	5	314-720	573
Roe:	Herring	4	660-1210	829
	Salmon--red	2	755-800	777
	pink	2	600-520	610
	chum	2	800-1090	960
	silver	2	580-630	605
	king	2	620-750	685
Heads:	Salmon--pink	1		163
	king	1		222
	Halibut	4	88-114	99
	Lingcod	1		73
	Red rockfish	2	72-98	85
Milt:	Herring	2	360-470	415
Entire viscera:	English sole	1		702
	Herring	4	1290-2320	1580
Miscellaneous:	King salmon backbones (from filleting)	1		173
	Shrimp waste (includes heads, tails, small shrimp, etc.)	1		225

All of the samples were obtained from the lakes, beaches, or coastal waters of Southeastern Alaska and were assayed fresh, or after a short period of frozen storage. Table 1 (shown on p. 19) lists the riboflavin content of only the portion of the flesh ordinarily considered edible. Tables 2 (above) and 3 (shown on p. 21) cover materials or species not ordinarily eaten. However, only raw material was analyzed; no canned or cooked products are included.

The assay method followed is a modification of a procedure reported by Andrews (1943). The sample is mixed with 2 percent acetic acid, and autoclaved for 15 minutes at 15 pounds steam pressure. The mixture is cooled, the pH is adjusted to a value of 4.3 to 4.5 with 1 N. NaOH, the proteinaceous material is allowed to settle, and the supernatant is filtered. Two equal portions of the filtrate are used for fluorometric determinations in the manner proposed by Hodson and Norris (1939).

One milliliter of water is added to the first portion, and the fluorescence is measured (this value is referred to as A). To the second portion is added 1 milliliter of a water solution containing 1 microgram of riboflavin per milliliter. The fluorescence of this sample is then determined (this value is referred to as B). To either or both of these samples is then added a small quantity of sodium hydrosulfite crystals to stop the fluorescence of the riboflavin. The residual fluorescence is then determined (this value is referred to as C). The weight of riboflavin in micrograms in the first portion is equal to $(A-C)/(A-B)$.



The absence of other substances that fluoresce in the same wave length as riboflavin and are also inhibited by sodium hydrosulfite was demonstrated by comparative assays, using the above method and the microbiological method of Snell and Strong (1939).

The data of Table 1 indicate that 100 grams of the raw edible portion of Alaskan fishery products contained from 16 to 292 micrograms of riboflavin. A normal serving portion would originally contain about 25 to 450 micrograms of riboflavin as compared to a recommended allowance for men of about 2,000 micrograms daily.

Table 3 - Riboflavin Content of Miscellaneous Marine Products of Southeastern Alaska

Common Name	Scientific Name	Number of Assays	Riboflavin content micrograms per 100 grams	
			Range	Average
Octopus (whole tentacle)	<i>Octopus bimaculatus</i>	1		43
Sea cucumber	<i>Stichopus californicus</i>	2	87-93	90
Shrimp (whole)	<i>Pandalus borealis</i>	1		250
Starfish--orange	<i>Pisaster giganteus</i>	1		69
brown	"	1		43
purple	"	1		42
twenty ray	<i>Pycnopodia helianthoides</i>	1		32
Hair seal liver	<i>Phoca richardii richardii</i>	1		1381
Steller sea lion--flesh	<i>Eumetopias jubata</i>	1		132
liver		1		943
blubber		1		34

The analyses reported in Tables 2 and 3 show that, in many cases, the waste portions are considerably richer in riboflavin than the parts generally eaten by man. These data should be of interest to animal feeders who use fishery byproducts.

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SECTIONAL REVIEWS

Middle Atlantic

CONDITIONS: Cold weather and rough seas restricted the production of fish in the New York-Connecticut area during January. Even the large draggers were

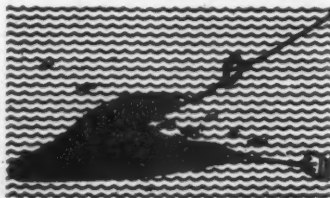


curtailed in their activities and those that had been operating off Long Island were unable to work any complete week. However, the surf-clam fleet reported advantageous landings during this period. Many of the boats of this fleet have installed pumps and jets which force water through the clams while they are being dredged, thus eliminating much of the mud and debris which nor-

mally has collected in the dredge before the clams were lifted on board the boats. Since this process is only in the experimental stage, it is too early to make positive statements regarding its effectiveness. It appears, however, from a comparison of the catches of the vessels, that those equipped with pumps and jets doubled production per unit of effort. The cost of each set of apparatus, including motor necessary for the set-up, averages 500 dollars, according to the Service's Fishery Marketing Specialist reporting the development.

There is a great deal of speculation as to the effect this new process will have on the surf-clam industry. Before its introduction, the entire industry was distressed over the decline in production. They feared that the clam beds already in use were being depleted to such an extent that too great an effort would soon be required of a vessel to bring in a satisfactory quantity and that the fleet would return to dragging and party-boat operations. Quota limitations were recently placed on boats equipped with pump and jet, in the anticipation that their increased production would overtax the capacity of the shore plants.

NEW JERSEY: Weather conditions not conducive to favorable fishing operations curtailed the landings of fish by otter trawl and line trawl fishermen during January, according to the Service's Fishery Marketing Specialist reporting from New Jersey. Although catches have not been appreciably lower than the general landings for similar periods in previous years, the catches of cod by the line trawlers were below expectations. This was offset by landings of cod by the draggers. Production of whiting and ling (red hake) compensated for the poorer landings of other species and prices remained consistently good.



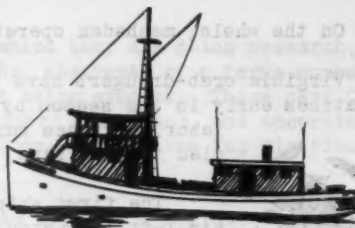
A factor contributing to curtailing of landings was the sinking of one fishing craft and the breaking down at sea of two others.

Due to shortages of materials and labor, many of the canning and reduction plants have not reached their anticipated production. Labor costs have been quite high, and production has been curtailed due to occasional work stoppages caused by wage disagreements.



Chesapeake

VIRGINIA: The menhaden season in Virginia ended about October 15, despite desires of the plant operators to continue longer, the Service's Fishery Marketing Specialist in Virginia has reported. If they had been able to operate through November, as is the custom, it is probable that production would have been greater, because schools of menhaden covering many acres were seen off the North Carolina Coast at that time. Lack of crews, however, forced the factories to suspend operations when men after men quit his job. Apparently, oyster prices were too alluring.



Another factor substantially limited production. In 1945, only 14 menhaden fishing vessels were operated in Virginia as compared with 21 in 1944. This was due to good fishing on the Atlantic Coast close to factories in other States, where Virginia vessels could land their catches more conveniently. Because of the lack of vessels, two of Virginia's seven menhaden factories did not operate. A total of 116,348,000 menhaden was landed compared with 108,434,000 in 1944, however. As the higher figure was the catch of one-third less boats working a shorter season than in 1944, an increase in natural supply was indicated.

According to reports, about two-thirds of the catch was taken in the Atlantic Ocean and one-third in the Chesapeake Bay. Nearly all of the fish caught in the Bay by menhaden vessels since 1936 have been taken in the North Channel area, which lies between Cape Charles and Cape Henry. Menhaden have not been found in the Bay proper in purse-seining quantities since they appeared in the Potomac River in 1936. At that time, it was possible for a boat to load up to half-a-million fish repeatedly from this source. Operators believe that military activity in various parts of the Bay in recent years, especially experimentation with explosives, may have made the fish stay away from the inner Bay and its tributaries.

Menhaden oil production was slightly higher in 1945 than in several preceding years. Virginia operators have speculated as to why oil content varies from year to year. Consensus is that fish from colder waters yield most oil, but that there are other conditions, such as the time of year and the direction of migration, that may have an important bearing on the matter. The average yield in Virginia for the year was between three and seven gallons per thousand fish. In past years, it has been known to reach as high as 14 gallons. The fish scrap yield, unlike oil yield, is generally consistent, averaging about 22 tons per 100 tons of fish.



Several factories start operating in early spring before purse-netting begins, in order to utilize scrap from alewife canneries. This scrap is processed along with menhaden caught in pound nets, for which, until the recent canning of such menhaden for food, there has been no other market. The price paid for these trap-caught menhaden, both by the canners and the factories, is low, about 3 dollars per thousand fish. It is estimated that it would cost more than that figure to catch them with vessel, crew, and purse-seine.

The oil obtained from the early season operations is from a combination of alewives and menhaden. It is customarily mixed with straight menhaden oil, even though its quality may be lower because of its darkness and high acid content. This, according to manufacturers, makes no difference in the price obtained, since all oil, mixed or unmixed, is purchased in accordance with an established analysis table.

On the whole, menhaden operators were satisfied with the season.

Virginia crab-dredgers have been greatly handicapped by the limitation put on catches early in the season by the buyers because of the scarcity of picking labor. Prices ranging from 5 to 6 dollars per barrel have dwindled to 3 dollars.



The first shipment of Virginia oysters to be transported by air left Irvington recently enroute to Chicago. Because of the lack of landing space for a cargo plane, the oysters had to be sent by truck to Washington, where they were put on board a Chicago-bound plane.

In an attempt to improve the effectiveness of oyster conservation laws, the governors of Maryland and Virginia were appointing three men each to meet on March 28 at Mt. Vernon.



KELP

The commercial utilization of the vast kelp (*Macrocystis pyrifera*) beds on the Pacific Coast, and of *Laminaria digitata* on the Atlantic Coast, was begun in a small way in 1912. This seaweed was at that time used in the production of potash for fertilizer and explosives. Bromine and iodine were recovered as byproducts. During the war in 1917-18, considerable money was spent in research to develop more economical methods for obtaining these products, since the shortage was acute. At the close of the war considerable progress had been made, but since imports of cheaper material could be obtained, most of the kelp plants closed. One or two remained in operation preparing fertilizer and dairy cattle food from the dried seaweed. It has since been found that the kelp contained alginic acid, which can be used in the manufacture of a material known as algin. This has a wide variety of uses, the most important of which is a stabilizer for ice cream and other dairy products. It is also valuable in the preparation of rubber articles, finishing of leather, waterproofing cement, fireproofing wood and other inflammable materials, treatment of boiler water, can-sealing compounds, water-base paints, dental-impression materials, and gaskets for airplane engines. This has grown into an industry of considerable importance, particularly during the present war, since many of the materials used by the armed forces contain algin.

TECHNOLOGICAL RESEARCH IN SERVICE LABORATORIES

Abstracts of Scientific Papers

In making literature surveys of fields in which they are doing research, the scientists of this Service prepare, on file cards, abstracts of a large number of the scientific articles dealing with the subject being studied. These card files have often been of great value to members of the fishery industries, and accordingly, the Service has decided to reproduce the cards from time to time for distribution to interested workers in the fisheries.

The initial series to appear has been prepared by R. Paul Elliott, bacteriologist, Seattle Fishery Technological Laboratory, and is entitled:

"I. Spoilage of the Protein Fraction of Fish.

1. Microbiological flora in fish, and Sources of . . . and Studies on . . ."

The cards are of standard 3-inch by 5-inch size, one of which is reproduced below as a sample. The material covered is highly technical and will be of interest mainly to specialists.

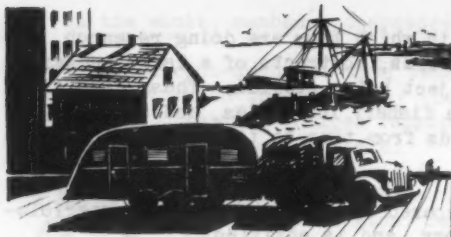
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Hess, Ernest, 1934	
Effect of temperature on the cell length and shape of <u>Bacillus vulgatus</u> J. Biol. Bd. Can., 1, 109-119	
<p>The mean length of cells of <u>Bacillus vulgatus</u> on slant cultures isolated from halibut intestine showed a rapid initial increase at 37° and 20° C. (4 to 7 hours), followed by a decrease up to 12 to 24 hours. At 37° the second increase occurred in about 9 days, while at 20° a gradual decrease was observed simultaneously with maximum spore production. At 5° C. a single gradual increase in mean length to practically three times normal took place up to 13 days, followed by rapid breaking up of the elongated cells. Separate tests of influence of temperature on the growth of <u>B. vulgatus</u> in nutrient broth and on agar slants seem to indicate that increase in cell length occurred mainly during periods of low growth rate, for example, at 5° during the first 13 days of incubation, and at 37° after 3 days' incubation. Although the comparison of such separate experiments may be questioned, these conclusions are in contrast to the results of Henrici (1923) but agree with Adolph (1931), who pointed out that inhibition of fission causes formation of large individuals and filaments. The least amount of shape modification of cells occurred at 20° at which temperature maximum spore formation took place, the latter interfering, no doubt, with any potential changes in cell shape. At 37° the early death of the cells apparently interfered with the formation of abnormal shapes, and at the 5° temperature, where neither spore formation nor destruction of cells were important factors, and the growth rate was lowest, maximum opportunity for modification of cell shape was given. At this temperature, a large variety of curved and bent forms occurred. In the later stages (after 17 days) many swollen (apparently dead) forms were found.</p>	

The Roman numeral in the upper left-hand corner indicates the general classification in which the card belongs (in this case, Spoilage of the Protein Fraction of Fish). The Arabic numerals in the upper right-hand corner indicate the general contents of the paper in accordance with a cross-indexing system that has been worked out.

The first series, Spoilage of the Protein Fraction of Fish, is now available upon request from the Fisheries Technological Laboratory, Fish and Wildlife Service, 2725 Montlake Boulevard, Seattle 2, Washington. As indicated above, the supply is limited, and distribution must be restricted to those in the industry who have a genuine need for these cards. New series will be announced in Commercial Fisheries Review as they are completed.

Boston, Mass.

Experiments were conducted to explore the possibility of using sardine wastes at the canneries. It is believed that the canners would realize a greater profit on waste than they do now, if it could be made into pet food. Several samples of pet food were prepared, but were not satisfactory due to the unavailability of the proper types of cereal.



A paper entitled "A Suggested Tripod for Small Fishing Vessels" was completed and submitted to industry technicians for review.

Final specifications for the mobile laboratory were completed in December, the purchase contract was awarded, and the delivery date was set for the middle of April.



College Park, Md.

After storage for 10 months, frozen shucked oysters continued to compare satisfactorily with freshly shucked oysters on the basis of palatability tests. The pH values of the frozen stock remained within the usual range for fresh oysters and the loss of weight was negligible. However, the amount of free liquor formed on thawing was quite variable, sometimes being quite large. The tests have aroused considerable interest. Several manufacturers have offered sample packages for testing.

Additional samples of oysters and oyster liquor were tested for salt and dry matter content, and the chitin determinations of crab scrap were concluded.

Twenty-four batches of menhaden oil were refined to reduce their content of free fatty-acids and gum-forming materials and at the same time lighten the color. This refining is aimed at increasing the usefulness of fish oil in paints and varnishes.

The thiamine content of Columbia River salmon is being determined by the rat-growth method.

At the request of the Army, a class of 33 officers was given one week's instruction in fish cookery at the Quartermaster Subsistence Research and Development Laboratory in Chicago.

Preliminary rushes of the motion picture, "Home Cookery of Fish", were completed. Assistance was rendered in the preparation of a teacher's handbook to accompany the film.

Charles D. Briddell, Inc., of Crisfield, Maryland, has made a grant of \$3,500 to the Service for studies on air sterilization, the work to be done at the College

Park Laboratory. A graduate student has been selected to make the investigation. The data will also be used for a masters' thesis in bacteriology at the University of Maryland.

The Service is cooperating with the Crisfield Seafoods Association and the University of Maryland in the development of a program of fishery technological research to be supported by State funds.

Several conferences were held with members of the executive committee of the Atlantic States Marine Fisheries Commission and the Maryland Pollution Control Committee to discuss problems of fishery sanitation and pollution control.

A permanent file has been established to bring together pertinent data dealing with fishery sanitation received from the various Atlantic Coast States. The material is being assembled through the cooperation of various State agencies and the Atlantic States Marine Fisheries Commission.

The first experimental work with a small group of mice fed frozen crabmeat was completed. A second series of mice experiments was started.

Further studies on the possible use of the enterococci as indices of fecal pollution have been made, using the direct plating method and a new enrichment broth. Sampling stations have been marked with buoys in the Crisfield, Maryland, area.



Seattle, Wash.

A series of experiments was begun to determine the keeping quality of fish precooled and stored at 30-32° F. as compared with iced fish.

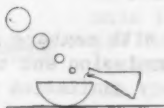
A research program designed to test out several methods of determining the fat content of fish meal was initiated. A comparison of numerous solvents, hot distillation and cold extraction, is being studied.

Plans and specifications are being drawn for the proposed addition to the existing pilot plant for cold-storage tests. The addition will provide space for a substantial cold-storage installation, will house the new trailer laboratory, and will provide a large work room and storage area on the second floor.

Tests were continued on agar extracted from samples of weed harvested at different seasons of the year. The results indicated that weed samples giving the lowest yield were taken during the winter months. Leaf samples gave higher agar yields than stem samples, and sterile specimens were lower in agar content than fertile ones. The higher agar content in summer may be due to a greater degree of branching and to a low proportion of unbranched stems, together with a scarcity of sterile plants.

Tests have been made on the new glass float to determine resistance to pressure, protection from shock, and methods of attaching to lines. A practical operating test of the floats showed that they would not stand the combined hydrostatic pressure and that of the lines when being hauled.

A number of cans of king crab, put up by different commercial canners and under different conditions, were examined at the laboratory. Of particular interest was the fact that crab held in cans without paper liners for several years was in as good condition as that with the regular parchment papers. Some packs showed considerable discoloration, but others were in excellent condition with no visible deterioration.



Ketchikan, Alaska

The entire staff of the Laboratory cooperated in the preparation of an exhibit, which was displayed at the Creative Arts and Crafts Exhibit in Juneau, Alaska, on January 25, 26, and 27.

A special booklet of 12 selected recipes, chosen on the basis of taste panel records accumulated in recent months, enjoyed a heavy demand.

A collection of all available data on the chemical characteristics of Alaskan fish was begun.



Mayaguez, Puerto Rico

Laboratory and field tests are being conducted with coco fiber rope to determine break load and percentage of elongation. The rope will be used in commercial fishing operations and tested periodically.

A research program dealing with the economics of the fisheries of Puerto Rico has been started. Wholesalers, retailers, and producers have been interviewed in securing data on costs. A simple statistical form has been devised for the recording of actual production and value.

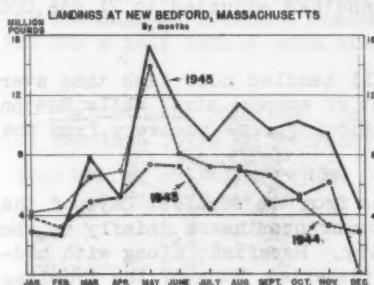
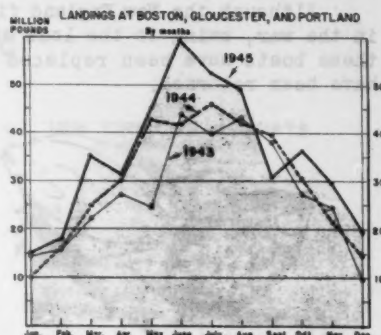
Thirty-seven samples of "poisonous fish" from the Virgin Islands were examined.



FRESH AND FROZEN FISH

New England

LANDINGS AT THREE PORTS: Landings by fishing craft at Boston, Gloucester, and Portland during December totaled 19,357,000 pounds, valued at \$1,449,700 to the fishermen, according to the Service's Current Fishery Statistics No. 248. This was an increase of 21 percent in quantity landed as compared with December 1944. Total landings during 1945 amounted to 423,615,000 pounds compared with 363,805,000 pounds landed during the corresponding period of 1944, an increase of 16 percent. Of the total, 188,161,000 pounds were landed at Boston; 213,498,000 pounds at Gloucester; and 21,956,000 pounds at Portland.

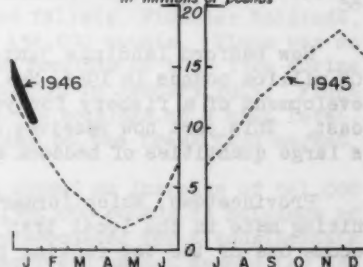


NEW BEDFORD LANDINGS: Fishery products landed at New Bedford, Massachusetts, during December totaled 4,354,000 pounds, valued at \$417,000 to the fishermen, according to the Service's Current Fishery Statistics No. 247. This was an increase of 50 percent in quantity landed compared with December 1944. Total landings during 1945 amounted to 101,363,000 pounds as compared with 74,936,000 pounds landed during the corresponding period in 1944, an increase of 35 percent. Greater landings of haddock, red hake, and mackerel accounted for the major portion of the increase.

COLD-STORAGE HOLDINGS: Holdings of fishery products in Boston cold-storage plants declined from a total of 15,734,000 pounds on December 26, 1945, to 10,426,000 pounds on January 30, 1946, according to the Service's Market News Office in that city. This was a decline of 42 percent from the peak of 17,998,000 pounds reached on November 28, 1945.

Holdings of salt-water fish were 9,046,000 pounds; fresh-water fish, 76,000 pounds; and shellfish, 1,304,000 pounds as of January 30. In terms of percentage, these figures represent a decline of 35 percent for salt-water items, 48 percent for fresh-water items, and 23 percent for shellfish from the holdings on December 26. Reductions are normal for this period when fishing operations are curtailed due to bad weather. However, this year the decline was probably accelerated because a large proportion of the Boston fleet of trawlers was tied up for the entire month of January.

COLD STORAGE HOLDINGS-BOSTON
in millions of pounds



NEW ENGLAND FISHERIES, 1945: New England's fishing industry in 1945 landed 566,802,000 pounds of fishery products at the major ports of the area, thereby breaking all previous records for production, according to the Service's Current Fishery Statistics No. 250.

The landings in 1945 represent a gain of 23 percent over those of the preceding year, and surpassed the previous peak production of 1941 by about 30 million pounds.

Although the New England fishing fleet operated under great difficulties early in the war, owing to the loss of many trawlers to the military services, most of these boats have been replaced by new ones and many of the requisitioned boats have been returned.



Fish caught by New England vessels--chiefly haddock, rosefish, cod, flounders, mackerel, and whiting--supply the bulk of the country's fresh fish markets. Most of the catch is made in the Gulf of Maine, on Georges and other banks south and east of Cape Cod, and on the more distant Nova Scotian banks.

For the third successive year, Gloucester took the lead among New England ports, handling 213,498,000 pounds. Boston, in second place, received 183,161,000 pounds. Third and fourth places were held by New Bedford and Provincetown, Mass., with 101,363,000 and 42,610,000 pounds, respectively. Portland landings amounted to 21,956,000 pounds.

Gloucester, New Bedford, and Provincetown all handled more fish than ever before in their history; Portland landings were about of average size; while Boston was still far below its pre-war level, although showing some recovery from the low level of the war period.

Gloucester, center of the New England fisheries from the earliest days of the industry until about 1907, has now regained its former prominence chiefly as the result of the recent growth in the rosefish industry. Rosefish, along with haddock, is at present the mainstay of the New England fisheries. Much of the trawling for rosefish is done on grounds widely scattered throughout the Gulf of Maine. Gloucester enjoys a slight geographic advantage in being nearer these grounds than Boston. Also, the small and medium sized boats employed in fishing for rosefish find somewhat better docking facilities at Gloucester.

Phenomenal growth as fishing ports has been made in recent years by both New Bedford, on the southern Massachusetts Coast, and Provincetown, at the tip of Cape Cod.

New Bedford landings jumped from about 50 million pounds in 1941 to over 100 million pounds in 1945. New Bedford's growth as a port came chiefly through the development of a fishery for yellowtail flounders off the southern New England Coast. This port now receives about half the New England flounder catch, as well as large quantities of haddock and sea scallops, plus miscellaneous other species.

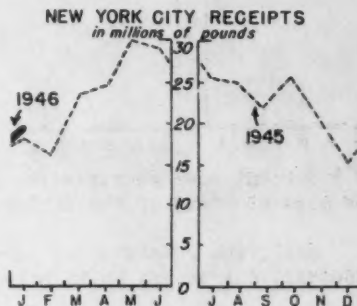
Provincetown, which formerly handled little but the catches of mackerel and whiting made in the local trap fisheries, through war-time boom in landings has become one of the top ranking ports of the area, with a fleet of about 45 small and medium sized trawlers or draggers. The chief species landed at Provincetown are whiting, flounders, cod, and mackerel. Located on the extreme tip of Cape Cod, this port has the advantage of a situation near good fishing grounds, so that

catches can be brought to port promptly. Provincetown draggers fish in the adjacent Cape Cod Bay in winter, and in summer, work the exposed ocean coast or "backside" of the Cape, an area noted for its dangerous shoals and lack of shelter for mariners.

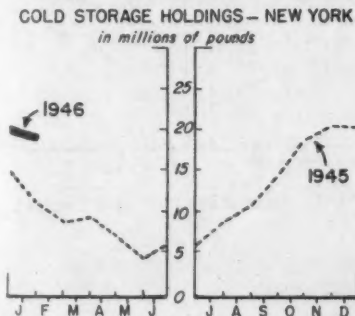


Middle Atlantic

RECEIPTS: Landings and receipts for January 1946 increased about 2 million pounds over those for January 1945, according to the Service's Market News Office in New York City. Fresh fish showed a slight rise, both in landings and receipts. Leading fresh items were fluke, cod, haddock, yellowtail, and whiting, fluke excelling all other species in arrivals during the month and increasing to double its size of January 1945. This increase was mainly due to the greater number of vessels participating in this fishery off the Atlantic Coast, from New Jersey to the Virginia Capes. Shellfish landings and receipts reached over a million and a half pounds, with clams, shell oysters, and shrimp the principal items.



COLD-STORAGE HOLDINGS: Cold-storage holdings of fishery products in New York City remained large on February 1, although there was a net reduction of about 2,000,000 pounds in January. Stocks on February 1 were 7,000,000 pounds larger than on February 1, 1945, according to the Service's Market News Office in New York. Total reduction of stocks during January was about 600,000 pounds less than the drop in stocks in January 1945. This indicated that the meat packers' strike did little to stimulate withdrawals of frozen fishery products.



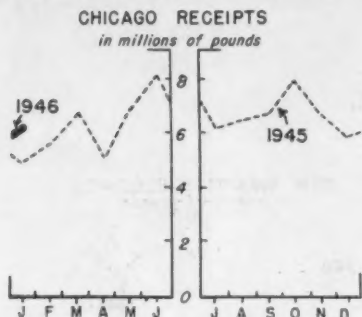
The major items held in New York cold-storage plants were steak and market cod, Boston mackerel, salmon, whiting, yellowtail, sablefish and cod fillets. Flounder holdings, including fluke, increased in January this year by 156,000 pounds. Fluke was an important factor in this increase as the landings and receipts of this item during January were 952,000 pounds compared with 438,000 pounds in January 1945. Fluke receipts thus had a considerable influence in keeping the holdings at a high level, even though dealers made record sales of this species on the fresh fish market.

On February 1, inventories of fresh-water fish showed an increase of 961,000 pounds over those of February 1, 1945. A gain of 1,354,000 pounds in holdings of shellfish was also recorded. Large stocks of shrimp accounted for a considerable portion of the latter increase. There was a vigorous fresh market demand for the larger sizes of this favorite item, but the smaller sizes were slow to move and, consequently, were conveyed to freezers.



Great Lakes

RECEIPTS: Receipts of fresh and frozen fishery products in the Chicago wholesale fish market during January totaled 6,231,000 pounds, an increase of 6 percent over the previous month and 28 percent above January 1945, according to the Service's Market News Office in that city.



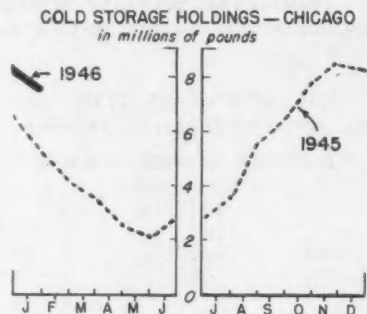
The receipt of more than a million pounds of whitefish during the month was responsible for a large increase in fresh-water receipts, which showed a gain of 51 percent over December, and 45 percent over January 1945. The New England vessel tie-up was reflected in a decline in receipts of haddock and rosefish.

Salt-water receipts dropped 11 percent below those of December, but showed an increase of 3 percent over receipts for January 1945. Halibut from British Columbia was the most abundant of the salt-water items in January.

Shellfish receipts declined during the month, dropping to 48 percent below December, but showed an increase of 29 percent over January 1945.

COLD-STORAGE HOLDINGS: Total holdings of fishery products in Chicago cold-storage warehouses on February 1 amounted to 7,528,000 pounds, according to the Service's Chicago Market News Office. Although this total was a decline of 11 percent from that on January 3, which represented holdings at the end of December, it was an increase of 47 percent over the holdings on February 1, 1945.

The nation-wide meat strike, which developed during the month, occasioned no abnormal cold-storage withdrawals. Holdings diminished very gradually, as current receipts were fairly adequate to take care of the market demands.



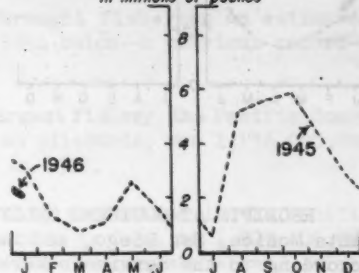
Gulf

PRODUCTION: Shrimp production in the Gulf area amounted to 17,500 barrels during January, a decline of 5,000 barrels as compared with the December total, and a decrease of 8,000 barrels below the January 1945 figure, according to the Service's Market News Office in New Orleans.

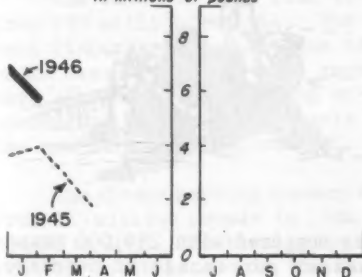
The catch of fresh-water and salt-water fish for January showed an increase of 29,000 pounds over December, but was 11,000 pounds under the January 1945 production.

Bad weather has been blamed generally for the decline in shrimp landings in 1945. Records disclose that few boats reached the "thousand barrel" class, while in other years many vessels claimed this distinction.

GULF SHRIMP RECEIPTS—
in millions of pounds



GULF COLD STORAGE HOLDINGS
in millions of pounds



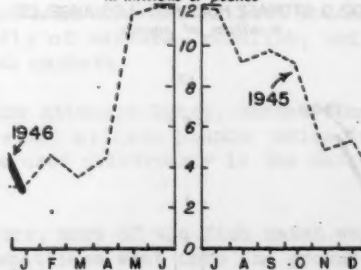
COLD-STORAGE HOLDINGS: Cold-storage holdings of shrimp in the Gulf area on February 1 totaled about 3 million pounds. Even though the seasonal decline in stocks continued, the holdings remained about 80 percent higher than those of 1945, according to the Service's Market News Office at New Orleans.



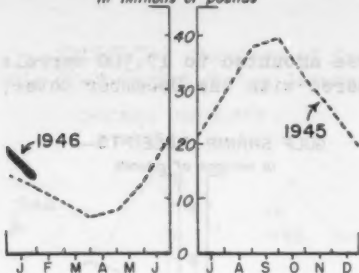
Pacific

SEATTLE RECEIPTS: Fresh and frozen fish and shellfish arriving in Seattle during January, totaled 2,939,000 pounds, according to the Service's Market News Office in that city. This was a decline of 45 percent compared with the previous month and 4 percent lower than January 1945. Much of the decrease may be attributed to the usual mid-winter slack-production period, and the influence of adverse weather conditions off the Coast. Most salmon and halibut fishermen lay up their craft for winter overhaul in preparation for increased fishing operations in the spring.

SEATTLE RECEIPTS
in millions of pounds



GOLD STORAGE HOLDINGS—NORTH PACIFIC
in millions of pounds



NORTHWEST COLD-STORAGE HOLDINGS: Fish and shellfish holdings in the cold-storage plants of Washington, Oregon, and Alaska totaled 13,250,000 pounds on February 1, according to the Service's Market News Office at Seattle. This represented a decline of 32 percent from holdings on January 1, but an increase of 10 percent over stocks held on February 1, 1945. Salmon, halibut, sablefish, and tuna were the varieties held in greatest abundance. About half of the area's total holdings were contained in the plants of Washington, while the remainder of the holdings were nearly evenly divided between Oregon and Alaska.

RECEIPTS AT SOUTHERN CALIFORNIA PORTS: Fresh fish landings at the ports of Santa Monica, San Diego, and San Pedro showed a general decline during January, according to the Service's Market News Office at San Pedro.

The Santa Monica-San Pedro area showed a decrease in landings of 2,969,000 pounds in January compared with those for December. Mackerel was largely responsible for this sharp decline, as the season for this species closed early in January. The closure of the season was reflected in mackerel landings of only 555,000 pounds for the month compared with a total of 3,558,000 pounds for December.

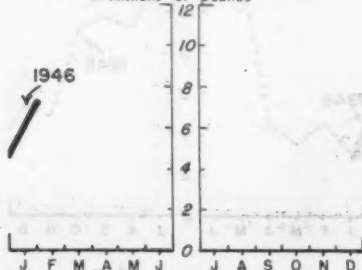


San Diego landings also showed a marked decrease during the month with only 80,000 pounds as compared with 239,000 pounds for December. Barracuda landings showed the greatest percentage of decrease.

The pilchard (sardine) fishery for the area of San Francisco and Monterey made little showing during January and raised the season's total landings for these ports to only 227,412 tons. San Pedro's landings totaled about 26,812 tons during the month, bringing its season's total to 160,031 tons. Storms in the vicinity of these three ports were largely responsible for the decreased tonnage.

LOS ANGELES COLD-STORAGE HOLDINGS: Holdings of fish and fishery products in Los Angeles cold-storage warehouses amounted to 4,352,000 pounds on February 1 as compared with 4,553,000 pounds on January 1, a net reduction of 201,000 pounds during January, according to the Service's Market News Office at San Pedro. January's freezings showed a decrease of 12.7 percent as compared with those for December.

COLD STORAGE HOLDINGS—LOS ANGELES
in millions of pounds



Since the nation-wide meat-packers' strike did not have the anticipated effect of greatly stimulating the demand for fresh and frozen fishery products, stocks of these items remained higher on February 1 than is normal at this season.

United States

1945 FISH PRODUCTION: United States production of fish and shellfish during 1945 amounted to approximately 4.4 billion pounds, a decline of over two percent from the 4.5 billion pounds caught the previous year, according to a preliminary estimate of production compiled by the U. S. Fish and Wildlife Service.

The total 1945 catch of fish and shellfish brought fishermen an estimated 230,000,000 dollars, which exceeded the value of the 1944 catch--a previous record--by 23,000,000 dollars.

The sharpest decline occurred in the nation's largest fishery, the Pacific Coast sardine industry. The catch of sardines, known also as pilchards, was 1,136,000,000 pounds in 1944, but dropped to 832,000,000 pounds in 1945.

Largely due to the smaller pilchard catch, total production in the Pacific Coast States and Alaska fell from 2,171,000,000 pounds in 1944 to 1,829,000,000 pounds last year. Among other major fisheries of the area, mackerel and salmon showed declines which, however, were largely offset by gains in tuna and Alaska herring.

The catch of tuna rose to 183 million pounds, from 170 million in 1944. The gain in this important fishery was in part due to the return of some of the vessels that had been requisitioned for military service, the building of new boats, and the opening to fishing of certain areas closed during the war for security reasons.

The Alaska herring fishery also showed a gain--from 113 million pounds in 1944 to over 120 million pounds in 1945. Practically the entire catch of this fishery is utilized in the manufacture of oil and meal.

Production of salmon declined from 431 million to 420 million pounds, while Pacific mackerel, a highly variable fishery, fell from 93 million to 60 million pounds.

Production on the Atlantic and Gulf Coasts and in the Great Lakes and Mississippi River increased slightly from the 1944 level, totaling 2,546,000,000 pounds in 1945, compared with 2,333,000,000 pounds the previous year.

The major ports in the New England area had the busiest year in their history, handling approximately 568 million pounds, a gain of more than 100 million pounds over 1944. Landings at these ports consist chiefly of haddock, rosefish, cod, flounders, and other species sold in the fresh fish markets.

The menhaden fishery, heaviest producer on the Atlantic Coast, showed some gain compared with 1944. The 1945 production was 740 million pounds; while in 1944, 685 million pounds were caught. Menhaden are used principally in the manufacture of meal and oil.

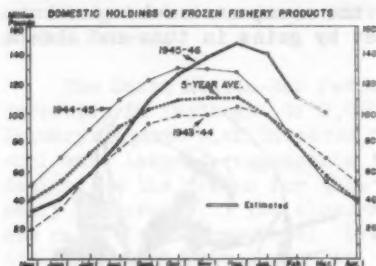
Compared with the average of the past four years, more of the fish catch was utilized in the fresh or frozen state, while somewhat less went into the production of canned fish and byproducts. About the same quantity--a relatively small amount--was cured. The 1945 catch was utilized as follows: 1.7 billion pounds



went to market as fresh and frozen fish; 1.2 billion pounds were canned; 1.4 were utilized as byproducts; and 0.1 billion pounds were cured.

The pack of canned fish and shellfish declined approximately four percent compared with 1944. Production in the major seafood canning industries in 1944 and 1945 was as follows:

	1945	1944		1945	1944
	Standard Cases	Standard Cases		Standard Cases	Standard Cases
Salmon:			Sardines:		
Alaska	4,302,895	4,893,059	Maine	2,600,000	2,919,500
United States	530,000	245,588	California	3,786,752	3,599,686
Total	4,832,895	5,138,647			
Mackerel:			Tuna	4,025,658	3,560,020
East Coast	50,085	232,780	Shrimp	142,000	401,178
West Coast	635,889	992,280			



COLD-STORAGE FREEZINGS AND HOLDINGS: Holdings of frozen fish and shellfish declined 25 million pounds during January, and on February 1 totaled 115,398,000 pounds. Stocks on that date were 36 million pounds greater than on February 1, 1945, according to the Service's Current Fishery Statistics No. 252.

Data on holdings of frozen fishery products furnished the Service's Fishery Market News Offices at Boston, Gloucester, New York City, and Chicago show that during the first two weeks in February, stocks were declining

at a much slower rate than in the same period in 1945.



SAUCES AND GARNISHES: The attractiveness of almost any dish consisting of fish will be increased greatly by the use of sauces that subtly enhance or complement the flavor. Any good cook book contains excellent suggestions as to the choice and preparation of such sauces.¹ Fresh and colorful garnishes also do much to create a dish as pleasing to the eye as to the palate, thereby whetting the appetite and helping to make the serving of fish a pleasurable and often repeated experience.

¹/Sauces for Seafoods. Fishery Leaflet 53. Mimeographed, 4 pages, may be obtained on request from the Fish and Wildlife Service, Chicago 54, Ill.

CANNED AND CURED FISH

Pilchard

PILCHARD PACK: Landings of pilchards at California ports during January were 2,669 tons below the December 1945 production. This was reflected in the 1945-46 seasonal total to January 26, which showed a decline of 28 percent as compared with the similar period in 1944-45. This season's pack of canned pilchards to the end of January, however, exceeded that of the previous season (1944-45) by 97,724 standard cases, according to reports from the California Sardine Products Institute and the California Division of Fish and Game. The pack from December 31 through January 26 was 402,373 standard cases, or 22 percent higher than the December pack.



This season's meal and oil production lagged behind that of the 1944-45 season by 32 and 36 percent, respectively.

California Sardine Landings, Canned Pack and Byproducts

Item		M O N T H			S E A S O N	
		1945-46	1945	1944-45	1945-46	1944-45
		Dec. 31-Jan. 26	Dec. 2-29	Dec. 31-Jan. 27	Aug. 1-Jan. 26	Aug. 1-Jan. 27
Landings	Tons	30,080	27,411	44,554	381,205	529,936
	1 lb. ovals-48 per case	106,846	77,884	147,824	1,110,306	1,333,723
	1 lb. tails-48 per case	291,979	241,907	271,316	2,323,822	1,988,575
Canned	1/2 lb. fillet-48 per case	-	-	700	-	5,027
	1/2 lb. round-96 per case	2,043	9,228	4,334	45,891	56,022
	Unclassified	1,505	644	9,759	93,110	94,572
	TOTAL, Std. 1 lb.-48 per case	402,373	329,663	433,583	3,573,129	3,475,405
Meal	Tons	January 4,593	December 8,816	January 7,151	Aug.-Jan. 55,391	Aug.-Jan. 81,862
Oil	Gallons	367,091	1,403,751	791,910	11,172,411	17,527,082



Shrimp

SHRIMP PACK: Because a vigorous market continued for fresh shrimp and stormy weather interfered with shrimping operations in the Gulf area, January's canned production fell 10,291 standard cases below that for the previous month and 11,898 cases below production for January 1945, according to reports to the U. S. Food and Drug Administration from plants covered by its Seafood Inspection Service. From January 6 to February 2, 5,260 standard cases of shrimp were packed, bringing the season's total to 122,127 standard cases.

Wet and Dry Pack Shrimp in all Sizes in Tin and Glass--Standard Cases*

M O N T H			S E A S O N		5-yr.-average July 1-Jan.31
1946 Jan.6-Feb.2	1945-46 Dec.2-Jan.5	1945 Jan.7-Feb.3	1945-46 July 1-Feb.2	1944-45 July 1-Feb.3	
5,260	15,551	17,158	122,127	405,008	491,689

* All figures on basis of new standard case--48 No. 1 cans with 7 oz. per can in the wet pack and $6\frac{1}{2}$ oz. per can in the dry pack.



Tuna

TUNA PACK: The production of canned tuna by California packers during January amounted to 170,157 standard cases, 38 percent less than the December pack, but 170 percent lower than that of January 1945, according to information furnished by the California Division of Fish and Game. Yellowfin tuna accounted for 76 percent of the January production.

The pack of mackerel for January totaled 35,049 standard cases. This was 76 percent under December and 31 percent below January 1945.

California Pack of Tuna and Mackerel--Standard Cases*

Item	January 1946 Cases	December 1945 Cases	January 1945 Cases	Twelve months ending with December 1945 Cases
Tuna:				
Albacore	-	28	1,407	473,652
Bonito	1,325	2,668	1,400	49,379
Bluefin	8,929	1	-	265,052
Striped	8,880	65,153	9,062	537,926
Yellowfin	129,750	177,906	40,566	1,457,630
Yellowtail	514	2,396	21	16,203
Flakes	20,759	26,175	10,568	731,518
Tonno style	-	-	-	16,198
Total	170,157	274,327	63,024	3,546,658
Mackerel	35,049	145,153	51,120	635,889

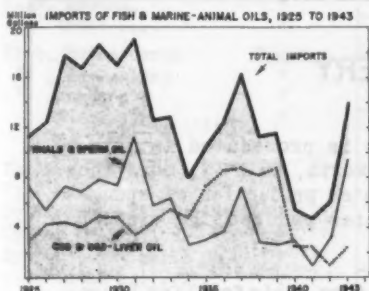
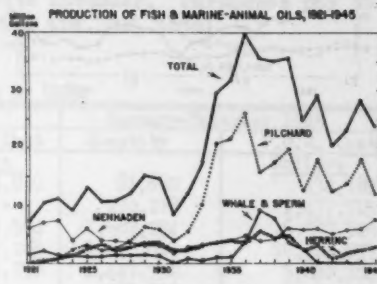
* Standard cases of tuna represent cases of 48 7-ounce cans, while those of mackerel represent cases of 48 1-pound cans.



FISHERY BYPRODUCTS

Oil and Meal

UNITED STATES PRODUCTION: Domestic production of fish oils during December totaled 958,916 gallons, a decline of 49 percent compared with the production during December 1944, according to the Service's Current Fishery Statistics No. 251. This brought the total for 1945 to 22,946,478 gallons compared with 27,324,173 gallons produced during 1944. Although complete data are not available on meal and scrap, items which accounted for 94 percent of the total 1944 production showed an output of 11,690 tons during December and 180,180 tons during 1945. The decrease in both meal and oil production was due to reduced landings of pilchards during the latter part of 1945.



Imports of fish and marine-animal oils into the United States rose from 4.7 million gallons in 1941 to more than 14 million gallons in 1943, mainly as a result of the resumption of the importation of whale and sperm oils. The apparent domestic supply of these oils (United States production plus imports, minus exports), averaged about 31 million gallons annually during the years 1941-43 compared with the high of 5.2 million gallons during 1936 and 1937. Detailed data on imports were given in the Service's Current Fishery Statistics No. 242. This leaflet also reported domestic production of 2,245,175 gallons of fish

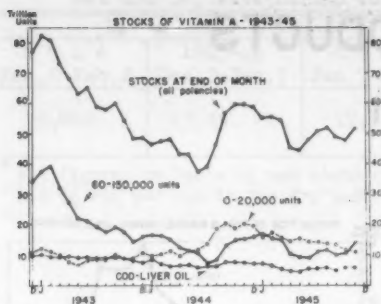
oil and 15,960 tons of meal and scrap for November.



Vitamin A

STOCKS AND PRODUCTION: Stocks of vitamin A in fish-liver oils on November 30 were reported at 52 trillion units, an increase of 8 percent over stocks held on the first of the month, but 13 percent less than those of November 30, 1944, according to the Service's Current Fishery Statistics No. 249.

Production of vitamin A during November totaled 5.1 trillion units compared with 5.6 trillion units produced during November 1944. Total production during the first 11 months of 1945 amounted to 57.4 trillion units as compared with 69.2 trillion units of the corresponding period of 1944.



Receipts of livers during November totaled 1,111,000 pounds, containing about 4.2 trillion units of vitamin A. During the same month of 1944, 1,053,000 pounds of livers, having a vitamin A content of 5.6 trillion units, were received.



THE SPONGE FISHERY

The sponge fishery of the United States is prosecuted in only a limited area in Florida, but yields a product worth, in 1943, more than two million dollars. Before the war, United States production of sponges exceeded 600,000 pounds, but wartime exigencies reduced the yield to 174,000 pounds in 1943.



Apart from their familiar household uses, sponges are required in the manufacture of special hygienic and surgical preparations, in leather dressing and glazing, in washing railroad cars and locomotives. They are used by tile and bricklayers, painters, decorators, lithographers, jewelers, and silversmiths.

A sponge of good commercial quality must answer many specifications. It must be spheroidal or cake-shaped in form, soft and fine in texture, and tough, durable, resilient, and absorptive. These characteristics are determined largely by the size and arrangement of the fibers. The Florida sheepswool is of higher quality than sponges of the same species produced in Cuba and the Bahamas. Three other varieties--wire, grass, and yellow--are inferior in quality and therefore of less importance to the industry.

OTHER NOTES ON FISHERY MARKETING

Purchases of Fish by Department of Agriculture

Purchases of fishery products by the United States Department of Agriculture during December declined \$3,568,200 as compared with November. Purchases for the year showed a decrease of \$26,319,200 compared with the 1944 total.

Purchases of Fishery Products by USDA

Commodity	Unit	December 1945		January-December 1945	
		Quantity	F.O.B. Cost Dollars	Quantity	F.O.B. Cost Dollars
FISH AND SHELLFISH					
Herring, canned	Cases	858	4,810	81,660	434,189
Mackerel, "	"	-	-	272,278	1,437,715
Pilchards, "	"	51,428	183,584	1,687,274	6,597,325
Salmon, "	"	31,789	275,283	1,649,017	16,184,073
Sardines, "	"	12,672	56,398	1,447,792	5,832,384
Squid, "	"	-	-	307,500	1,491,375
Tuna and tuna-like fish, "	"	-	-	53,828	569,932
Fish, flaked, "	"	-	-	20,267	205,986
Fish, ground, "	"	-	-	125,887	365,506
Total	"	96,747	520,075	5,645,503	33,118,485
Fish, brine-cured	Pounds	-	-	40,000	8,000
" , dry-salted	"	-	-	20,309,570	3,259,100
" , smoked	"	-	-	1,531,600	162,123
Total	"	-	-	21,881,170	3,429,223
BYPRODUCTS					
Feeding oil	"	-	-	41,000	15,990
Fish meal	"	-	-	2,880,000	115,125
Oyster shell	"	-	-	160,000	640
Oyster shell flour	"	-	-	320,000	1,120
Oyster shell grits	"	-	-	440,000	1,604
Total	"	-	-	3,841,000	134,479
VITAMINS					
Vitamin A fish-liver oil M Units		-	-	14,502,262	3,902,447
Grand Total		-	520,075	-	40,584,634



Wholesale and Retail Prices

Wholesale and retail prices for all foods decreased 0.6 and 0.3 percent, respectively, from mid-December to mid-January, according to reports of the Bureau of Labor Statistics, Department of Labor. Average retail prices for fresh and canned fish showed a gain of 2.5 percent and those for fresh and frozen 2.9 percent. The retail price of canned pink salmon also displayed a small rise, while that for canned red salmon decreased 0.2 percent.

Wholesale and Retail Prices				
Item	Unit	Percentage change from		
Wholesale: (1926 = 100)		Jan. 12, 1946	Dec. 15, 1945	Jan. 13, 1945
All commodities	Index No.	106.7	0	+1.9
Foods	do	107.6	-0.6	+2.8
Fish:				
Canned salmon, Seattle:				
Pink, No. 1, Tall	\$ per dozen cans	1.970	0	0
Red, No. 1, Tall	do	3.694	0	0
Cod, cured, large shore, Gloucester, Mass.	\$ per 100 pounds	13.50	0	0
Herring, pickled, N. Y.	¢ per pound	12.0	0	0
Salmon, Alaska, smoked, N. Y.	do	35.0	0	0
Retail: (1935-39 = 100)		Jan. 15, 1946	Dec. 11, 1945	Jan. 16, 1945
All foods	Index No.	141.0	-0.3	+2.7
Fish:				
Fresh and canned	do	237.3	+2.5	+8.2
Fresh and frozen	¢ per pound	36.4	+2.9	+9.4
Canned salmon:				
Pink	¢ per pound can	23.4	+0.9	+1.7
Red	do	40.8	-0.2	+1.2



Fishing in National Forests

The fishing streams and lakes of the country's 152 national forests were used in 1944--last year for which statistics have been compiled--by 1,450,000 anglers who spent a total of 2,210,000 days in the woods, the Forest Service reported on February 15. While all indications are that these figures were surpassed in 1945, the Forest Service expects 1946 to hang up a new record for use of the forest waters by fishermen. To meet the expanded post-war increase in fishermen visitors to the forests, and to make up for the drastic reduction in fish planting during the war, many new fish planting and stream improvement projects are needed. Natural lakes in forests probably can be made more productive by the use of fertilizer, and some consideration has been given to this means of increasing the productivity of cold-water ponds and lakes. Impounding water is an important help towards increasing the sport of fishing, and some of these impounded waters can be used for swimming and picnicking.



FOREIGN FISHERY TRADE

Imports and Exports

GROUND FISH IMPORTS: On February 2, the Bureau of Customs, Treasury Department, announced preliminary figures for imports of fresh and frozen groundfish within quota limitations provided for under trade agreements. A total of 3,623,900 pounds were received from the beginning of the quota period, January 1, to February 2. In 1945, the January total was 1,359,298 pounds, the year's total was 41,313,204 pounds, and the year's reduced-tariff quota (figured on the basis of 15 percent of the average apparent United States consumption of the previous three years) was 17,668,311 pounds.

Commodity	Jan. 1-Feb. 2, 1946	December 1-31, 1945	January 1945
Fish, fresh or frozen, fillets, steaks, etc., of cod, haddock, hake, cusk, pollock, and rosefish	3,623,900	3,175,144	1,359,298



Argentina

Two liver samplers were ordered for use in a plant in Argentina, the Service's Technological Laboratory, at Seattle, Washington, reported recently. Thus, the liver sampler, developed by Fish and Wildlife Service personnel at Seattle (Fishery Market News, May 1944, pp. 9-10, and November 1944, pp. 6-11), is being used as far north as Alaska and as far south as Argentina.

Sharks in Argentina are bought in the round, and the price of the livers is estimated from the length of the fish. The fish are separated as to size and sex. The buying of livers based on the length and sex of the fish has worked out very satisfactorily, it was reported.



Canada

COLD-STORAGE: There was a considerable reduction in holdings of fresh fishery products in Canada's cold-storage warehouses during January, according to the Department of Trade and Commerce of the Dominion Bureau of Statistics. Despite the freezing of 4,849,000 pounds in January, stocks fell from 27,442,000 pounds on January 1, to 19,377,000 pounds on February 1. The holdings of the latter date were somewhat below the 20,950,000 pounds held on February 1, 1945, a year earlier.



Cuba

FROG LEG INDUSTRY: The export of frog legs from Cuba to the United States has grown during recent years into a sizable industry, with shipments of over 300,000 pounds in 1945, valued at more than 100,000 dollars, according to a report received by the State Department from the American Embassy at Habana, Cuba.



Excerpts from the report follow:

The quantity of frogs in Cuba is increasing rapidly, and exports are expected to gain steadily in importance.

The only species of frogs exploited commercially in Cuba is the bull-frog. It was first brought into Cuba in 1915 from the United States. There are no commercial breeding ponds in Cuba at the present time, as the Ministry of Agriculture asserts that it is not economical to produce frogs commercially.

There is no estimate of the number of frogs in Cuba. The drought which followed the hurricane in 1944 reduced production somewhat, but breeding regained impetus when the rains began again in 1945. Following the temporary decline in exports during the war, the Ministry of Agriculture estimates that there are now sufficient frogs to double the rate of exports.

The quantity of frogs caught depends to a large extent on the price and demand for tobacco. When tobacco prices are low, tobacco growers and workers turn to frog-hunting as a side line for additional income. When tobacco prices are good, they do not bother with frogs.

There is no particular season for catching frogs in Cuba. They are hunted all year round, but in winter, when there is a prohibition in the United States against catching frogs, business in Cuba becomes brisk until spring, when harvest in the United States commences.

There are about 20 cleaning and packing stations in Pinar del Río province. Hunters bring the live frogs to the cleaning stations and deposit them alive in a corral until a truck loaded with ice arrives from the exporter in Habana. The frogs are then cleaned and skinned by hand. The legs are placed in iced tanks and wooden cases and trucked to Habana for repacking and shipping. No use is made of the waste and skins.

Prior to the war, the method of repacking frog legs in Habana involved more detailed operations than at present. During the war, there was a scarcity of paraffin paper and cardboard cartons, and refrigerated shipping was not available. Packers were then forced to pack in bulk without ice coating, in wooden boxes containing 100 pounds of frog legs and about 120 pounds of ice. This method of packing has continued. Packing houses hope, now that the war is over, that they will be able again to glaze and pack as before.



Frog skins heretofore have been wasted because the market possibilities and the method of tanning were unknown, but it is reported that an American processor has obtained information as to methods of drying and preparing skins, and this year intends to ship to New York for distribution to European markets.

Until very recently, frog meat was not used in Cuba, but lately, a number of people have begun using it. In the large cities, it is eaten principally by foreigners. Domestic consumption as a whole is negligible.

Exports of frog legs prior to 1938 were comparatively insignificant, and were, therefore, not shown separately in foreign trade statistics, but subsequently they have risen sharply. Average yearly exports from 1943 to 1945, inclusive, amounted to about 260,000 pounds, or about two and a half times as much as the period from 1938 to 1940.

Miami is the chief port of entry into the United States for Cuban frog legs. From there they are distributed to other consuming markets. About two months ago, about 4,000 pounds were sent by air express to New York, but this method of shipping has not been continued because the freight is high.



Newfoundland

THE COD FISHERY IN 1945: The State Department has recently received a report from the American Consulate General, St. John's, Newfoundland, on that country's cod fishery in 1945. Extractions of the report follow:

Although it got off to a bad start with poor results from the trap fishery on the Northeast coast and the failure of the Labrador fishery, the Newfoundland fishing industry as a whole, which provides a more widely distributed and greater employment than any other, finished up the year with one of the best catches in recent years. Salt codfish production was the highest since 1939; exports of salt cod exceeded those of 1944 by almost 26 million pounds; the herring fishery, because of relief orders, became of major importance; and there was a further expansion of the frozen fish industry.

The estimated quantity of codfish salted during the calendar year 1945 was 106,984,000 pounds, an increase of 1,618,000 pounds over the figure for 1944. Stocks of salted codfish remaining on hand as of December 31, 1945, were only 40,738,000 pounds as compared with 48,210,000 pounds on December 31, 1944.

Exports of salt codfish during 1945, amounted to 120,321,000 pounds as compared with 94,340,000 pounds in 1944, an increase of almost 26 million pounds or 27½ percent. Exports to the United States showed little change.

The number of men engaged in the cod fishery in 1945 is believed to be about 24,700, an increase of about 10 percent over 1944, when the number was 22,400. This increase, almost entirely in the inshore fishery, is attributed to smaller employment on the American and Canadian bases and to a greater supply of materials needed for the industry.

The inshore fishery engaged 18,873 fishermen, a larger number than usual, and production was correspondingly high, being helped by one of the most successful fall fisheries in history and the extension of the season. The failure of the trap fishery early in the season has aroused discussion as to whether this type of fishing is worthwhile, since the cost of traps and their continuous repair is so much larger than the outlay for hook and line fishing.

Export selling prices were set by the Combined Food Board and were the same as 1944, with the exception of standard Labrador, hard dried, which was increased by \$1.60 a quintal^{1/} for large and medium and \$1.55 for small.

Labrador fish is the lowest priced of the codfish grades; in fact, the wisdom of continuing an industry occupying a large number of men and absorbing considerable capital to obtain a grade of fish in little demand and of poor quality is often questioned by the Press.

The deep-sea fishery was the best of the century. Some bank fishermen extended the usual March to September season by operating in conjunction with shore-based filleting plants in Canada and Newfoundland. The 111 vessels engaged and the number of men employed were fewer than usual, but the catch of 127,630 quintals made the per capita production one of the best on record. Ship to shore telephone service was used for the first time in the deep-sea fishery.

One of the most encouraging aspects of the Newfoundland fisheries is the continued growth of the frozen codfish industry. There are now operating 44 filleting plants and 15 freezing plants, 13 of the latter being quick-freeze plants and 2 using the sharp-freeze method.^{2/} The latter are now being converted to quick-freeze plants.

The production of frozen cod fillets in 1945 was 30,852,000 pounds as compared with about 24,000,000 pounds in 1944. Exports of fresh and frozen cod fillets in 1945 were 33,881,000 pounds, of which at least 90 percent consisted of frozen codfish. Of these exports, Britain received 19,382,000 pounds; the United States, 6,053,000 pounds; Canada, 8,566,000 pounds; Australia, 1,000 pounds; and Portugal, 300 pounds.

From the above, it will be seen that about 75 percent was taken by Britain. The shipments to Britain were sold at lower prices than were obtainable in Canada and the United States.

There is no assurance that Britain will continue to take large quantities of fresh and frozen cod fillets, so that Newfoundland is looking to the United States for additional markets. It is believed locally that the United States could ultimately

^{1/}One quintal equals 112 pounds

^{2/}After certain alterations which are now being made, are completed, these plants will have a daily maximum production of 622 pounds, with a storage capacity of 8,945,000 pounds.

absorb up to 100,000,000 pounds of Newfoundland fillets a year. That the country is optimistic regarding the industry is evidenced by the fact that much new capital is being invested in cold-storage operations, including the building of draggers or schooners with diesel power for trawling.



Norway

SALTED FISH: A total of 2,000,000 pounds of salted fish, dry salt basis, has become available for immediate importation from Norway to this country, according to the Department of Agriculture. The action follows recent recommendations by the Combined Food Board.

The available supplies include 1,000,000 pounds of pickled boneless cod fillets (skin on) and 1,500,000 pounds (1,000,000 pounds dry salt basis) of heavily salted salt bulk ling, washed and pressed. The cod fillets will be shipped in casks and the salt bulk ling in wooden boxes.

All shipments involved in this action will be exported by a Norwegian Government agency, and not by individual exporters.



South Africa

FISH MEAL AND OIL: The following item is reprinted from the Commercial Intelligence Journal (Ottawa, Canada) for February 9, 1946:

The Fisheries Development Corporation of South Africa, Limited, is to form a new company to produce oil and meal at Stumpnose Bay (just north of Saldanha Bay) from pilchards, according to a report in the Cape Argus in late November. The report stated that orders had already been placed in the United States for the necessary plant and that work on the building was to be started as soon as possible. The company is to be financed jointly by the Corporation and four canning companies, each of which will hold a fifth share.

It was announced at the same time that there is a further plan for another company with headquarters at Hant Bay near Cape Town to produce fish-liver oil, frozen crawfish tails, and smoked fish.

According to another South African press report, a Cape Town firm handling marine products has purchased, in the United States, a complete plant for the production of fish meal and oil from pilchards caught in South African waters. The plant, it is stated, will be capable of processing ten tons of fish per hour.

FEDERAL LEGISLATION, DECISIONS, ORDERS, ETC.

Civilian Production Administration

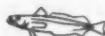
TINPLATE: Because the work stoppages at steel plants have caused a shortage in supplies of tin mill products, first preference must be given by tinplate producers to orders for the production of cans and closures for food packing, the Civilian Production Administration announced on February 7.

This special preference will be confined to tinplate requirements to make cans for packing perishable or seasonal food products, drugs, medicals, biologicals, or products to be delivered to certain Government agencies, as well as for closures. Closures were defined as sealing or covering devices affixed to a glass container.

This action, effected by the issuance, on February 7, of Directions 9 to Orders M-21 and M-81, respectively, was foreshadowed in recent statements of Civilian Production Administration officials to the industry advisory committees of the canning industry and the tinplate producers.

Under Direction 9 to Order M-21, producers of tin mill products were required to schedule maximum production of tin mill products suitable for making cans or closures for packing of food products. This direction, therefore, will concentrate tin mill production on tinplate, while the production of other tin mill products; that is, terneplate and blackplate, will be subordinated.

Direction 9 to the container Order M-81, virtually paralleled provisions in Direction 9 of M-21 and provided that until February 17, 1946, can manufacturers could continue to use the tinplate not suitable for the products mentioned above for other food products.



Office of Price Administration

WHITE SEA BASS: Amdt. 16 to MPR. 579--Certain Species of Fresh and Frozen Fish and Seafood--effective February 6, increased processors' maximum prices for frozen dressed white sea bass $23\frac{3}{4}$ cents a pound--from the former 20 cents to $23\frac{3}{4}$ cents--the Office of Price Administration announced on February 1, 1946.

The action also established a processors' ceiling price of 41 cents a pound for skin-on frozen white sea bass fillets, and $47\frac{1}{2}$ cents a pound for skinless frozen fillets of this species. These prices replaced the old processors' ceiling of 38 cents a pound for all frozen white sea bass fillets.

The processors' increases will be passed on at other levels of distribution and will result in an increase of about four cents a pound for the frozen dressed fish at retail.

The new prices for frozen white sea bass followed a recent adjustment made in fishermen's ceiling prices for the fresh fish (Order G-6 under Maximum Price Regulation 579, issued by the San Francisco Regional OPA Office on October 26, 1945).

The amendment also established dollar-and-cent processors' and distributors' ceiling prices for the first time for frozen round, drawn and steaked white sea bass, and for the dressed fish from which the collar bone had been removed.



NUTRITIVE VALUE OF FISH AND SHELLFISH: Fish are good natural sources of calcium, phosphorus, iron, and copper and provide protein of unexcelled quality. Some species also furnish vitamins in appreciable quantities and sea fish are rich in iodine.

Fish are an important source of proteins, a type of food which must be included in the diet to provide the elements needed to grow and repair worn-out body tissues. Some proteins are complete in that they supply all of the elements needed; others are incomplete and must be supplemented with other protein foods if the body is to remain in normal health. Fish proteins, like those in beef, pork, and other meats, are complete in themselves and proteins of this type should supply about one-third of the daily protein requirement.



Fish are an excellent source of most of the minerals which the body needs to develop properly and perform its functions. Calcium and phosphorus (without which proper development of bones and teeth is impossible) occur in fish fillets in about the same quantities as in beef round. Marine fishes are especially rich sources of iodine, containing 50 to 200 times as much of this essential element as any other food. Oysters, shrimp, and crabmeat, compared with milk, provide half as much calcium, five times as much magnesium, and slightly more phosphorus. Iron and copper, which build up the hemoglobin content of the blood and prevent or remedy nutritional anemia, are easily obtained by eating most fish. Oysters and shrimp are the best known sources of these two minerals.

--Conservation Bulletin No. 38

RECENT FISHERY PUBLICATIONS

Listed below are informational publications which recently have been processed by the Division of Commercial Fisheries. With the exception of the FL series, these may be obtained, free of charge, from the Division of Commercial Fisheries, Fish and Wildlife Service, Washington 25, D. C. FL publications are available from the Fish and Wildlife Service, Merchandise Mart, Chicago 54, Illinois.

Number	Title
CFS-216	- Current Fishery Trade, Monthly Summary, September 1945
CFS-238	- Vitamin A Report, October 1945
CFS-243	- New England Landings, New Bedford, Mass., November 1945
CFS-244	- New England Landings, Boston, Gloucester and Portland, November 1945
CFS-245	- Frozen Fish, 1945
CFS-246	- Current Fishery Trade, Monthly Summary, November 1945
CFS-247	- New England Landings, New Bedford, Mass., December 1945
CFS-248	- New England Landings, Boston, Gloucester and Portland, December 1945
FL-117	- Positions in the Division of Commercial Fisheries (Revised)
FL-170	- Sponge Production and International Sponge Trade of the United States

Designations for fishery publications are interpreted as follows:

CFS - Current fishery statistics of the United States and Alaska.

SL - Statistical lists, consisting of lists of dealers of fishery products and manufacturers of byproducts.

FL - Fishery leaflets.

MDL - Market development lists of frozen food locker plants and locker associations.



Compositor: Jean Zalevsky

FISHERY STATISTICAL OFFICES

<u>Location</u>	<u>In Charge</u>	<u>Telephone</u>
W. Boothbay Harbor, Me., P. O. Box 33.	David A. McKown, Fishery Marketing Specialist	164 (Home)
Boston 10, Mass., 253½ Northern Ave.	B. E. Lindgren, Fishery Marketing Specialist	LIberty 1513-4
Gloucester, Mass., Rm. 205, P. O. Bldg.	H. Haberland, Fishery Marketing Specialist H. R. Marchant, Fishery Marketing Agent	3420
Provincetown, Mass., Rm. 201, P. O. Bldg.	Frank Freeland, Fishery Marketing Agent	868
New York 7, N. Y., 155 John Street.	R. T. Whiteleather & R. H. Wilson, Fishery Marketing Specialists	REekman 3-4382-3
Avon, N. J., Drawer D.	V. E. Heffelfinger, Fishery Marketing Specialist	Asbury Park 6837M (Home)
Weems, Va., General Delivery.	James Wharton, Fishery Marketing Specialist	Kilmarnock 14F5 (Home)
Savannah, Ga., 206 W. 34th Street.	C. B. Lowden, Fishery Marketing Specialist	- -
W. Palm Beach, Fla., P. O. Box 1966.	Austin L. Brown, Fishery Marketing Specialist	5726 (Home)
New Orleans 16, La., 1100 Decatur Street.	Chas. D. Stewart, Fishery Marketing Specialist	MAnolia 1674-5
San Pedro, Calif., Rm. 8, P. O. Bldg.	C. B. Tendick, Fishery Marketing Specialist	TERminal 2-5354-5
Seattle 1, Wash., 421 Bell St. Terminal.	E. C. Hinsdale & Frank M. Wood, Fishery Marketing Specialists	MAin 0740-1
Astoria, Oregon, 1st Nat'l Bank Bldg.	R. J. Bettendorf, Fishery Marketing Specialist	- -

HOME PRESERVATION OF FISHERY PRODUCTS



A 21-page leaflet of information on home preservation of fishery products has been revised and reissued by the Fish and Wildlife Service as Fishery Leaflet 18.



This illustrated publication discusses the methods and equipment used at home for drying, dry-salting, brine-curing, smoking, and pickling many kinds of fish. These methods have several advantages: They are simple, do not require much equipment, are inexpensive, and permit utilization of varieties not canned successfully. Suggestions for the preparation of these products in tempting menus have been added.

This leaflet is available, free of charge, from the Fish and Wildlife Service, Merchandise Mart, Chicago 54, Illinois.

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